

Tender Document

For

The implementation of

Nanded City Surveillance Network & GPS based Vehicle Tracking System for Emergency Vehicles

Issued by
The Commissioner,
Nanded Waghala City Municipal Corporation
Nanded

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1 Tender Notice

Nanded Waghala City Municipal Corporation (NWCMC), Nanded invites proposals from reputed companies for the design, development, implementation, maintenance and support of City Surveillance & VTS, Nanded – City Surveillance Network & GPS based Vehicle Tracking System for Emergency Vehicle

Tender Download & Submission	The tender can be downloaded and submitted on the eprocurement website of NWCMC – http://nwcmc.maharashtra.etenders.in
Tender Fees & EMD	Tender Fees - Rs. 5000/- (Rs. Five Thousand only) EMD – Rs. 5,00,000/- (Rs. Five Lakh only)
Schedule of Tender Events	Date of release of Tender : 11/02/2013 Date of Voluntary Prebid : 27/02/2013 Date of Tender Submission : 13/03/2013 at 15.00 hrs Date of Opening of Technical Bids : 13/03/2013 at 15.30 hrs Date of Opening of Priced Bids : To be announced later

Sd/-
Commissioner
Nanded Waghala City Municipal Corporation
Nanded

2 Introduction

2.1 About Nanded

The Nanded city, with a jurisdiction of about 51.76 km, is the headquarters of the Nanded District in the Marathwada Region of Maharashtra state. It is the second largest urban center in the Marathwada region after Aurangabad.

The district of Nanded lies in the border of Maharashtra and shares boundaries with Yavatmal District in the north, Parbhani, Latur and Osmanabad Districts in the west, Bidar District of Karnataka in the south and Nizamabad & Adilabad Districts of Andhra Pradesh in the east.

Table 1 - Demographic Profile of Nanded District

Total Number of Households	523,539
Total Population	28,68,158
Male	14.76 lakh
Female	13.91 lakh
%age of Urban Population to Total Population	28.29 %
Population density	272
Literacy Rate	68.52%
Male Literacy	81.14%
Female Literacy	55.12%

Nanded city is located at 18°30' North latitude and 77°10' East longitude at about 489 meters above mean sea level. It is about 260 km each from Aurangabad and Hyderabad and about 300 km from Nagpur.

Nanded is regionally linked by road to other urban areas by Major State Highway (MSH) 6 to Degloor in the south east towards Hyderabad, MSH 2 to Bhokar in the north east and Latur in the south east, MSH 3 to Hadgaon in the north, MSH 6 to Madgaon in the north west, SH 44 to Purna in the west, and SH 223 to Kandhar & SH 224 to Osmannagar in the south.

In terms of railway connectivity, Nanded is part of the South-Central Railway Division of the Indian Railway. It lies on the Mumbai-Secunderabad railway line. It is serviced by direct rail connectivity to Mumbai, Secunderabad and Amritsar (via Delhi).

Providing a gateway to the Marathwada region is the Nanded Airport or the “Shri Guru Gobind Singh Ji Airport”. Aviation Regulator, DGCA (Director General of Civil Aviation) awarded Provisional Aerodrome License to Nanded Airport in Public use Category on 5th April, 2010 and Permanent License on 1st October, 2010. The Airport currently provides air connectivity to major metro cities viz, Delhi, Mumbai, and Nagpur. The passenger traffic at Nanded airport has grown substantially (approximately 14 times) over the last year.

2.2 About Nanded Waghala City Municipal Corporation

Nanded Waghala City Municipal Corporation (NWCMC) was established on 26th March 1997, by merging Nanded Municipal Council and adjoining Waghala Municipal Council. The Corporation is constituted under the provisions of Bombay Provincial Municipal Corporations Act, 1949 and is also governed by the provisions of 74th Constitutional Amendments Act 1992(CAA). In addition to the Waghala Municipal Council, Vasarni Village, Kautha Village, Asarjan Village, Fatehjangpur Village, Asadwan Village and CIDCO and HUDCO colonies areas were merged with the NWCMC:

The total area under the NWCMC jurisdiction is 51.76 Sq.km, (5,176.66 Ha). Nanded City is divided in two parts i.e. Old Nanded (20.62 Sq.km) north of the Godavari river (on the left bank) and New Nanded (31.14 Sq.km) comprising of Waghala and six other newly merged villages and CIDCO area, south of the Godavari river (on the right bank).

2.3 NWCMC Structure

The organization structure comprises of an elected wing and an executive wing.

Elected Wing: The elected wing is represented by the General Body (GB) constituted by 73 elected members / Municipal Corporators and 5 co-opted members. The General Body together with Municipal Administrators and Departmental Heads formulate the framework for discharge of municipal functions, both obligatory and discretionary, of the Municipal Corporation. Apart from GB there are 5 Committees constituted with elected Members including Standing Committee of 16 elected Members, to address matters related to administration / provision of civic services in a most appropriate manner.

Executive Wing: The administrative or executive wing is headed by the Municipal Commissioner, appointed by the State Government. The Municipal Corporation is organized into five geographical Divisions for effective service delivery and management. Further, there are 24 multi-member electoral wards drawn for the purpose of the corporation elections, which also double up as administrative and management sub-divisions.

The executive wing is organized into functional departments that are responsible for day-to-day functioning of the Municipal Corporation, including planning, engineering, operations & maintenance and other service delivery functions.

2.4 City Surveillance & VTS at NWCMC

Making sense of the current state of an emergency and of the response to it is vital if appropriate decisions are to be made. NWCMC with wide-ranging socio-economic disparities is now witnessing the ongoing Information Technology (IT) revolution. NWCMC recognizes the importance of Information and Communication Technology as a key enabler in its economic development as well as improving the quality of life and functioning of government.

With the objective of providing better Governance and improving the quality of life of ordinary citizens of the City, NWCMC has initiated various e-Governance projects. In this regard and on its part Department of Police, NWCMC seeks to lay the foundation for better Governance and create core infrastructure and integrated service levels to ensure a citizen-friendly environment for Police Services in the state.

In concurrence with the city vision of delivering services to the citizens in a fast, efficient and timely manner, Department of Police, NWCMC has proposed City Surveillance & VTS which would also cater for Emergency Services like, Police Assistance, Reporting of crime, Medical Assistance in case of road accidents and reporting of Fire.

To enhance security of citizens of Nanded and protect vital assets of the city and also to reduce wait time for citizens for getting help during emergency there is a need to develop systems which will ensure highly effective police operations with accurate flow of information and communication.

State-of-the art Control room operations for Nanded Police has to be developed. Proposals with comprehensive solutions are requested for following two parts of the Project from competent System Integrators having experience in Geographic Information System (GIS), Global Positioning Systems (GPS), City Surveillance etc.

Part One : City Surveillance & VTS, Nanded –City Surveillance Network

Part Two : GPS based Vehicle Tracking System for Emergency Vehicle

2.5 Project Envisage

- Project is envisaged to enables the NWCMC to provide a better service to the public.
- Its high performance and intuitive user interface ensure a faster response to emergency calls improved presentation of information means that operators can provide a more informed response to callers using GPS based Vehicle tracking system.
- Live monitoring of activities in the sensitive locations, from the point of view of security and crime prevention & detection.
- To record the movements of vehicles and public at specific locations for future planning / actions.
- To create a Central Command and Control Centre.
- Immediate incident detection and effective management of police response.
- Support and integration with the existing systems.
- Identification of disaster/emergencies and response thereon, create communication infrastructure which is omnipresent in nature with essential focus on video surveillance.
- The system should be capable of providing connectivity in city Urban Limits with the objectives of surveillance as per the locations as details given in tender document.
- The Project envisages implementation of an I.P. based Video Surveillance system and GPS based vehicle tracking system for emergency response on a proposed network for aiding visual surveillance and faster communication and response for:
 - ✓ Law & Order,
 - ✓ Special events like public gatherings, processions etc.
 - ✓ Crime Control,
 - ✓ Traffic control, etc.
- System should be scalable, be able to integrate existing system and provide enhanced functionality and services as required in future (Scalability and Expandability)

2.6 Part One- Nanded City Surveillance & VTS

2.6.1 Scope of work

Department of Police, NWCMC has planned for Surveillance monitoring in the city. The city has a fast growing floating population with divergent socioeconomic strata and monitoring of large number of vehicles in the cities has become a significant task. The Department of Police, NWCMC is looking for an outdoor surveillance system using IP CCTV systems to initially cover the important locations in city specifically the sensitive areas including all entry and exit points, parking lots, crossovers, junctions, market areas, critical hot spots, etc. The system should be capable of monitoring from multiple locations including police control room and NWCMC control room.

The proposed surveillance system will involve setting up of an intelligent security system comprising IP based outdoor security cameras across various locations and places of strategic importance throughout city that will have the ability to monitor, detect, alert and record any attempts of attacks, theft, vehicular movement, human movement, etc. The video surveillance data from various cameras deployed at critical areas will be stored, monitored and analyzed at the centralized control rooms to provide an intelligent reporting, MIS & alert generation mechanism which can enable faster and efficient decision support, and ensure preventive security mechanism for the city.

IP based CCTV cameras will be used to monitor the City. A mix of High definition IP based Fixed and PTZ cameras will be used for the purpose. Both IP based CCTV Camera should work with network media which can be Wireless broadband (wifi/wimax), Fiber based Network or lease line by service provider.

Band width requirement for on an average for a typical CCTV PTZ/ Fixed camera is 2 Mbps and for Megapixel Camera requires 4 Mbps.

To enable hybrid connectivity, as per feasibility i.e. Wireless broadband (wifi/wimax) , Fiber based Network or lease line by service provider , network will be preferred. This network should be zero interruption based communication for links among Control room and IP Cameras installed & spread over --locations in the city.

The successful bidder shall be responsible for end-to-end implementation of connectivity of all the locations under this RFP and shall quote and provide/ supply any item(s) which are required for successful implementation and commissioning of the system as well as its management.

Since no single network exists to integrate the project across the city, a combination of network technologies to be used to provide seamless connectivity to all cameras. Network Operation Centres (NOC) and control rooms shall also be provided with scalable capacities to allow for reasonable expansion in the future.

The system must have redundant network communication capability to be accessible from primary command and control center.

The required networking equipment for end to end connectivity from Control room to individual Surveillance Cameras shall also be provided by the bidder at each location.

The complete ownership of the network proposed on wireless/fibre will that be of NWCMC. However complete maintenance will be in the scope of the bidder including rectification of minor or major faults/breakages in the network equipment.

Carry out installation of active components, passive components and accessories supplied as per standards for successful integration and implementation of the systems at each locations connected under this RFP.

Configuring and fine-tuning of subsystems to achieve overall optimal network performance with high level physical & cyber security.

Wireless Communication should be fully secure and shall support 128-bit encryption or better.

The city wide surveillance system needs to have the capability to deploy intelligent video analytics software on any of selected cameras. This software has various applications:

Presence of Vehicle

Red Light/Stop

Light Violation

Traffic flow/Congestion

Parking Violation

One way traffic control

Traffic Volume estimation and statistical counts

Tripwire/ Intrusion

People loitering

Wrong way detection

Unattended object

Face Capturing

Number plate capturing

Theft Protection

Camera Tampering etc.

The video analytics capability of the system needs to be capable of being upgraded to new and improved video analytics as they become available.

All the cameras will be connected to a Command & Control Centre which will be equipped with video management modules and storage modules. Provisions will be made to record and view live incidents at all surveillance premises. Recorded clips can also be viewed readily on

requirement. The Command & Control Centre will be equipped with video wall setup to aid the officials in monitoring events. Abnormal activities should identify and indicated by the system.

2.6.2 Objectives

- To offer proactive approach to improve public safety and security in the State.
- To deploy technology solutions to sense, analyze and enable a coordinated response to handle the threats better.
- To act as deterrent to potential exploitation of vulnerabilities.
- Layered approach to secure City Entry/Exit, zones and critical infrastructures.
- Street Level Security Solutions with Video Analytics, Aerial Surveillance, Traffic Management etc.
- Intelligent infrastructure to command & control & gain rapid inputs from ground units.
- Provide alerts / feedback to the Police Department about abnormal movements /suspicious objects, etc.
- Better management of security across the public places through 24x7 intelligent monitoring.
- Faster response to security breaches.

Improved turnaround time in responding to any investigation case, faster access to evidence in case of security breach, law violation in the premises

2.6.3 List of Locations

1	Hanuman Chowk
2	300 year building dena bank chowk
3	mahaveer Chowk
4	Chikhalwadi Chowk
5	sachkhand Gurudwara gate 1 & 2
6	sachkhand Gurudwara gate 3 & 4
7	Tower Mouda - two places
8	Habib talkies

9	Pasha chowk
10	Deglur naka chowk
11	Bafna Point / Kalani Type
12	Hingoli Gate (khurana Travels)
13	Annabhau Sathe Chowk
14	maharana Pratap chowk
15	anand Nagar Chowk
16	Bhaya Nagar
17	Workshop T Point
18	Raj Corner
19	Taroda Naka
20	Bhavsar chowk
21	Shrinagar / BK Hall
22	Yashwant college
23	ITM college chowk
24	Itwara chowk
25	Gokul nagar (rly station area)
26	shivaji Nagar Masjid
27	Y point Ganesh nagar (phule Market)
28	ITI point
29	Kalamandir
30	ST bus Stand
31	Rly station ambedkar Statue
32	shivaji statue
33	Mutha chowk
34	Chowpala chowky
35	Dhoot Niwas
36	Sarafa corner Gavil Chowk
37	Khude nagar Chowk
38	Chanda Singh Corner
39	Dhavale Corner
40	Shivaji Chowk CIDCO
41	Shivaji Chowk HUDCO
42	Ambedkar Chowk Latur Rd
43	Big Bazar Latur Rd
44	Maltekari T point
45	Ashna River Bye Pass Shakar Rao Chowk
46	Ashna River Beach
47	Airport Chowk

2.7 Part Two - GPS based Vehicle Tracking System for Emergency Vehicle

2.7.1 Scope of Work

Supply, Installation, commissioning and Running of “Integrated GPS based Automatic Vehicle Tracking System for Nanded City with centralized control room upto one (1) Year minimum warranty.

The responsibility of Bidder is to extend training & handholding to the Police/NWCMC Staff (Call Takers, Dispatchers and Administrators) in the control room.

The Automatic vehicle tracking devices should combine both active and passive tracking abilities: when a cellular network is available and a tracking device is connected it transmits data to a server; when a network is not available the device stores data in internal memory and will transmit stored data to the server later when the network becomes available again.

The automatic vehicle locator unit have to be installed with GPS/GIS receiver, and to be linked with Nanded city Police control room.

The vendor shall also provide the GPRS & GPS services in collaboration with a telecom service provider (TSP). The vendor shall sign a tripartite agreement with NWCMC, alongwith the TSP, which will include a detailed service level agreement, guaranteeing the 99% availability of the telecom service.

2.7.2 Objective

- To offer proactive approach to improve public safety and security in the State.
- The whole system has to be integrated to work as a full-fledged solution so that when an emergency call emerges from a public, it has to be identified from where the call emerges. It has to be located in the digital map and nearby patrol vehicle as shown in AVL system has to be diverted. The call has to be recorded in the log register at Central control room and details have to be entered in the computer in a predetermined format (template).

3 General Terms and Conditions

Objective: This TENDER is intended for obtaining a techno commercial proposal from reputed organizations (hereinafter called 'Bidders') to supply, design, install, test, commissioning and support City Surveillance Network & GPS based Vehicle Tracking System for Emergency Vehicle for Nanded Waghala City Municipal Corporation.

This tender is issued as Two Part Bids for providing Integrated Video Surveillance System at Strategic locations identified in Nanded city and GPS based Vehicle Tracking System for Emergency Vehicles in Nanded as per Terms, Conditions and Specifications mentioned in the tender document. Please be advised that the rates, terms & conditions finalized against this tender shall be binding till completion of the entire scope to our full satisfaction.

The Bidder shall have the single point responsibility for the complete solution including supply, design, installation, testing & commissioning.

3.1 Eligibility Criteria

Sr. No.	Criteria	Documents Required to be attached with tender to Establish Eligibility
1	The bidder (prime bidder in case of a consortium/JV) must be a registered corporate in India, registered under the Companies Act 1956, or a Govt. Organization. The bidder (prime bidder in case of a consortium) should be operating in India for the last five years as on 31/03/2012	<ul style="list-style-type: none">• Copy of Certificate of Incorporation• Copy of Consortium agreement / JV agreement or Memorandum of Understanding to work together in case of winning the project. JVs / Consortium documents should clearly mention roles and responsibilities of each participating member.
2	The bidder shall be a reputable Indian / Multinational Company with primary business in Technology; and it must also be either an Original Equipment Manufacturer or Authorized system Integrator(s) of the principle OEM, in India.	Service Tax Registration Certificate for the said services. VAT Registration Certificates Copy of PAN Card
3	The bidder (each of the bidders in case of a consortium, JV) should have positive net-worth as on 31/03/2012.	<ul style="list-style-type: none">• Copy of the audited balance sheet of the company (s)• Certificate from the Chartered Accountant

4	The bidder (prime bidder in case of a consortium, JV) should have an overall average annual turnover of at least Rs. 15CR during last 3 financial years as on 31/03/2012	<ul style="list-style-type: none"> • Copy of the audited Profit & Loss Statements for each of the last 3 financial years
5	The bidder should have an overall turnover of at least of total Rs. 1 CR from intelligent video analytics based security surveillance system projects for the last 3 financial years (as on 31/03/2012)	<p>Work completion Certificates and copies of client citation / purchase order / work orders showing all the details sought.</p> <ul style="list-style-type: none"> • Reference for each of the projects has to be given and should contain the following information - Name of organization, individual/s to contact, phone number and address
6	The bidder (prime bidder in case of consortium) should have an ISO 9001:2000 certification & ISO 270001	Copies of the valid certificates from authorized agencies

Bidder should submit duly signed and stamped documentary proof in support of all the Pre-Qualification Criteria mentioned above along with the Un-Priced Bid. Offers submitted without valid supporting documents will be summarily rejected.

This tender is not transferable.

Timely implementation of the project is essence of this contract. Hence, only those Bidders having requisite capacity and capabilities and genuinely interested to meet our time lines are requested to participate in the Tender.

3.2 Earnest Money Deposit (EMD)

The tender shall be accompanied by Earnest Money of **Rs. 5,00,000/- (Rupees Five Lakh only)**. The earnest money shall be in one of the following alternative forms:

- (a) Demand Draft or Pay Order or Bankers' Cheque in favour of "**The Commissioner Nanded Waghala City Municipal Corporation nanded**" from a reputed commercial bank, payable at Nanded.
- (b) Irrevocable Bank Guarantee from a reputed commercial bank, **valid and operative till 30 days after the validity of tender, i.e., 180 Days from the date of opening of Technical bids (as published in the tender notice)**, in the prescribed format of NWCMC enclosed with tender document (Annexure I). The bank guarantee shall be addressed to **The commissioner, Nanded Waghala city Municipal Corporation,**

Nanded. Non judicial stamp paper of appropriate value shall be purchased in the name of executing bank only.

Tenders not accompanied with the earnest money mentioned above shall be liable for rejection.

3.3 PreBid Conference

A pre-bid conference will be held in the office of NWCMC at 10.00 hours on 27/02/2013 with the prospective tenderers to clarify the technical or any other related matters.

Any decision on the discussion requiring modification; amendments for tender document will be uploaded on the website.

3.4 Tender Submittal

Only one Envelope for the EMD and Tender Fees shall be submitted to the address mentioned below before the tender submission due date and time. Envelope shall be marked as Envelope for “EMD & Bid Processing Fee for Project City Surveillance & VTS” and tender reference.

Office of the DMC (Reforms)
Nanded Waghala City Municipal Corporation
Nanded

Tender documents will be available on the website <http://nwcmc.maharashtra.etenders.in> upto the date and time as shown above. Bidders who wish to participate in this tender shall have to register on this website.

Bids must be submitted online through <http://nwcmc.maharashtra.etenders.in> not later than the time and date specified in this tender document. Bidders are advised to refer to detailed e-tendering instructions contained in Annexure IV of this tender document.

NWCMC may, at its discretion, extend this deadline for submission of bids by amending the bid documents, in which case all rights and obligations of NWCMC and Bidders subject to the deadline will thereafter be subject to the deadline as extended.

No bid may be modified after the deadline for submission of the bids.

No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of the bid validity specified by the Bidder on the Bid Form. Withdrawal of a bid during this interval shall result in the Bidder's forfeiture of its bid EMD.

3.5 Tender Opening

NWCMC will open all bids (only Technical Bids at the first instance) through the e-Tendering website of <http://nwcmc.maharashtra.etenders.in> in the presence of Bidder or his representative who choose to attend, and at the following address:

Office of the DMC (Reforms)
Nanded Waghala City Municipal Corporation
Nanded

The Bidder's representative who is present shall sign an attendance register evidencing their attendance. In the event of the specified date of Bid opening being declared holiday for the tendering Authority, the Bid shall be opened at the appointed time and location on the next working day.

The Bidder's names, bid modifications or withdrawals, bid prices and the presence or the absence of requisite bid security and other details will be announced at the time of opening.

Commercial Bids of only those Bidders who qualify on the basis of evaluation of technical bid & Demonstration will be opened in the presence of the qualified Bidders or their representatives at pre-specified time and date which will be communicated to the qualified Bidders well in advance.

3.6 Proposal Preparation Costs

NWCMC shall not pay any costs associated with the preparation, submittal, or presentation of any proposal or for any survey / requirement gathering work carried out by the bidders.

3.7 RFP Amendment and Cancellation

NWCMC reserves the unilateral right to amend this RFP in writing at any time. NWCMC also reserves the right to cancel or reissue the RFP at its sole discretion. If an amendment is issued it shall be provided to all vendors, whose intent to respond to this RFP is known. Bidders shall respond to the final written RFP and any exhibits, attachments, and amendments.

3.8 Right of Rejection

NWCMC reserves the right, at its sole discretion, to reject any and all proposals or to cancel this RFP in its entirety. Any proposal received which does not meet the requirements of this RFP may be considered to be non-responsive, and the proposal may be rejected. Bidders must

comply with all of the terms of this RFP and all applicable Constitutional laws and regulations. NWCMC may reject any proposal that does not comply with all of the terms, conditions, and performance requirements of this RFP.

NWCMC reserves the right, at its sole discretion, to waive variances in technical proposals provided such action is in the best interest of NWCMC. Where NWCMC waives variances in proposals, such waiver does not modify the RFP requirements or excuse the Bidder from full compliance with the RFP. Notwithstanding any variance, NWCMC may hold any Bidder to strict compliance with the RFP.

4 Detailed Scope of Work

Scope of the job includes but is not limited to supply, design, installation, implementation, testing and commissioning, training, providing user manual, providing 12 months warranty and 48 months post warranty AMC for the total solution including all hardware, software, materials, services and support etc. for providing a City Surveillance Network & GPS based Vehicle Tracking System for Emergency Vehicle system for City Surveillance & VTS, Nanded, project so as to fulfill the objectives listed in this document. Job also includes all related jobs at controlling office. All necessary cabling / wiring / sockets and allied infrastructure conforming to respective quality / standard norms are also included in the scope of this job.

4.1 SOLUTION OVERVIEW

The envisaged City Surveillance & VTS shall be a Hybrid System with distributed architecture having 2 control stations; one at the SP office, one at NWCMC building. Fixed Day/Night IP based Surveillance Cameras shall be used at the entry & other strategically important points while PTZ Cameras shall be used for general surveillance of the location including number plate viewing.

NWCMC has planned for total 47 locations under 6 zonal offices including NWCMC building with approximate 100 cameras. While preparing network & Infrastructure, scalability for total 60 locations (around 175 cameras) should be taken into consideration.

All respective locations where video surveillance is required are mapped to respective six zones. These Zones shall be further connected to Police control room, where it will be connected to NWCMC Command and Control Centre at Main building.

The IP cameras shall be connected to Network. A network, comprising an 8-port/24-port switches and media converters connected with CAT6 & SM-OFC or wireless link or lease line as per feasibility, shall be laid at each camera location for transmission of signal from Camera to the Control Stations. The Main Control Station shall have a Server (with Monitoring, IVA & AVL Software) for Video Storage and vehicle tracking, a monitor, a workstation, a UPS, a Switch & a

Joystick/PTZ Controller. The Sub-Control Station shall have a workstation & a PTZ Controller for monitoring the Video.

The proposed Solution should allow NWCMC officials to locally and centrally monitor its facilities from a remote location on a Portable/Fixed personal computer monitor using IP-based Cameras in a bandwidth efficient manner.

The Solution should capture, store, and analyze digital video images to enable central monitoring, increase operational efficiency, reduce liability, minimize risk and secure people & property.

The IP based system should ensure secure and ready video access from virtually anywhere on NWCMC IT network. Authorized personnel should be able to rapidly zero in on images of specific locations, people, and events, anytime and anywhere, without reviewing countless hours of video recordings. Trans-coding should enable the transmission of video at low band width.

The system should be provided with weather proof outdoor IP based Fixed Camera, lens, housing & mountings to capture video which would be viewed & controlled through the Video Management Software, recorded and stored.

The system should also provide Weather Proof outdoor IP based PTZ dome cameras to capture video which would be viewed & controlled through the Video Management Software, recorded and stored.

The Citywide Surveillance System must have built in robustness to continue to operate and provide live remote access under disaster conditions. Under disaster conditions or under malicious attacks, damage to the system should remain localized and the system as a whole should continue to operate without interruption.

The video management software will be used to configure the video management server, and once installation and setup are complete, the video management server should run seamlessly in the background to manage the connections, access and storage. Video management server should receive MPEG-4 or better quality video across the network from Video IP Camera. The server should stream incoming video and audio to a connected storage.

The viewing mode can be controlled remotely by a management system. The Video Management Server, Workstation ,Monitors will all be placed at the control room with additional work station at locations mentioned by NWCMC.

Video transmission will be mainly over a wired network. However, for cameras where feasibility is a problem, wireless transmission or lease line is recommended as can be seen from the Bill of Materials. Wired connectivity is suggested through a combination UTP and optical fibre cables.

The system must have redundant network communication capability to be accessible from primary command and control center at SP office, secondary locations in NWCMC building control room and if required other City Offices using ordinary computers connected to the internet or using wireless cell phone network or Wi-Fi Network. System shall also be accessible from mobile vehicular monitoring units that can be located anywhere in the city.

The Successful Bidder will commission the network as per the recommended architecture to achieve the Video surveillance and VTS requirements. However, wherever site conditions mandate a modification in the recommended architecture, the Successful Bidder should seek prior approval from NWCMC before executing the job. Optimum speed, data transfer capabilities and video frame rates should be ensured by the successful bidder while implementing the solution.

Successful bidder should specify clearly the RMT rates for all cables (Electrical, Control & Video signal cables) including commissioning charges while participating for the Tender.

Power supply source to the camera and other outdoor & indoor equipment should be UPS backed up and conditioned power supply. Successful bidder should offer relevant power conditioning equipment for the safety of the site equipment. Appropriate outdoor casings and housings should be used for the outdoor equipment.

The Successful Bidder shall conduct a site survey of designated locations, and evaluate the feasibility of the wired network and wireless wherever specified, with regards to cameras within LOS. The bill of material attached in this document is only indicative and the successful bidder has to provide the detailed BOQ & calculate the design needs and obtain NWCMC's signoff before commencing the job.

City Surveillance & VTS shall allow event based and motion based alarms and schedule based recording options of locations/events deemed sensitive by NWCMC within the city and within the range of the camera.

The Outdoor cameras shall be housed in IP66/NEMA4 casings. All housings shall be of the same make as that of the camera.

It should be possible to Control (Pan-Tilt-Zoom -for PTZ cameras), View and record (for all cameras) the events occurring within the range of camera at a centrally located PC at control location. The control locations will be given by NWCMC.

The Server shall make continuous recording of all cameras for 7 days and the specific events for a period of at least 30 days adequate storage @ 25 fps and 4 CIF. If necessary, additional storage in form of hard disk drive shall be provided by the Successful bidder at no additional cost to NWCMC.

After commissioning the City Surveillance & VTS, the same shall be demonstrated for all its capabilities to the relevant user department to make them familiar with the system on mutually agreed dates.

Approved makes in the technical specifications have been mentioned to ensure certain minimum standard of compliance. However, if the bidder desires to recommend any other make, he will have to demonstrate the suitability of the product and its technical standing vis-à-vis approved brands. Requests for approval of other makes can be made till the date of pre-bid meeting. Criteria for approval will include but will not be limited to global market share, domestic market share, certifications and testimonials. NWCMC's decision in this regard will be final. The OEMs will have to make technical presentation on the day of prebid meeting. The OEM will also have to submit documents/presentation in support of their respective claims.

4.2 System Overview

The indicative system architecture is provided in tender document.

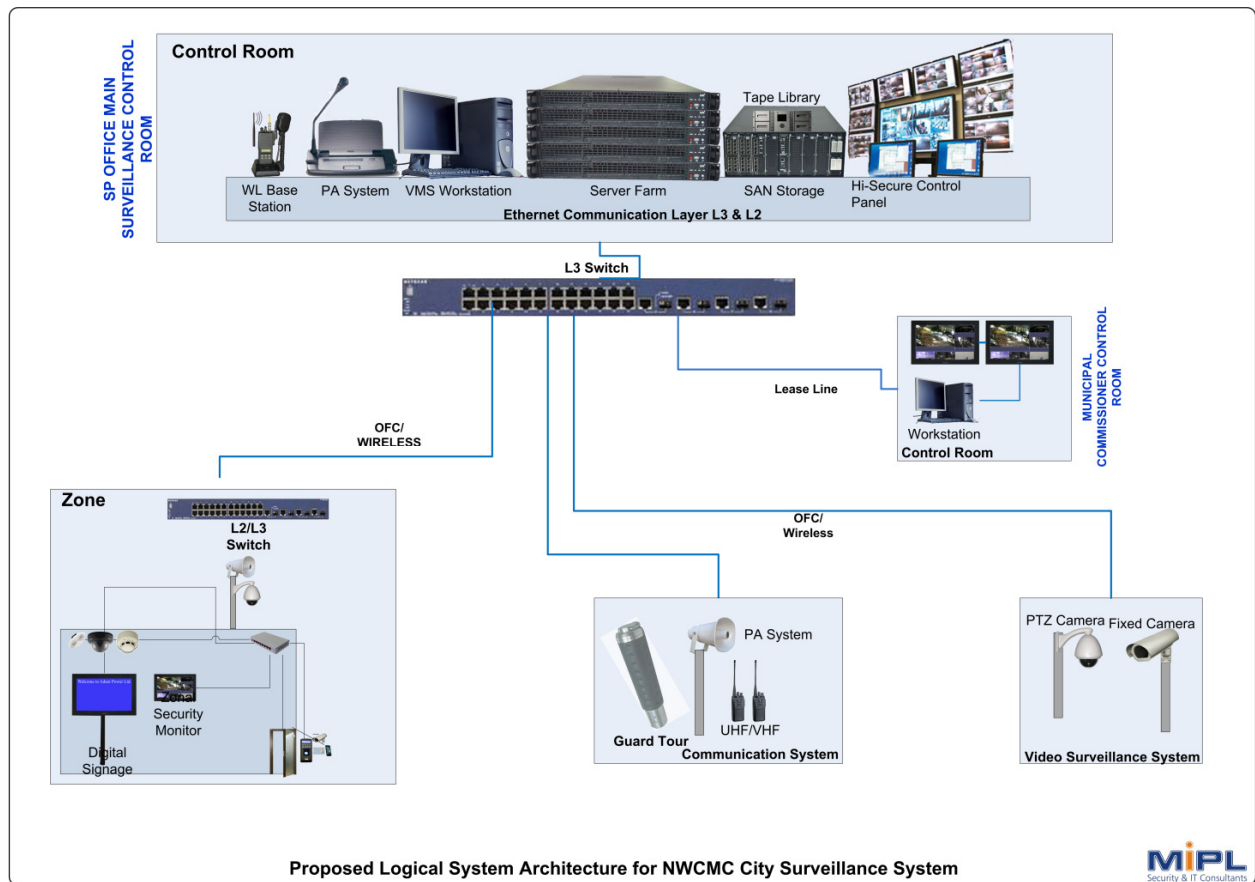
The Video Surveillance System will consist of, but not limited to the following:

- Fixed Day/Night Camera
- PTZ Camera
- Video Storage Server
- Video Monitoring Workstation
- Video Management & IVA Software
- 42" LCD Monitor
- 8-Port Layer-2 Managed Switch with 1 100Base-Fx Port
- 24 Port Layer-2 Managed 10/100Mbps Switch
- Passive Networking Components
- Wireless Digital Transmitters & Receivers
- Online UPS of required rating
- UPS at camera locations

Central command and control center location at SP office will required below bill of material at broad level

- Video wall 3x3
- Monitoring workstations with 20" monitors (for VMS and VTS)
- LAN components
- Monitoring and recording server
- SAN/NAS
- Indoor Fix Dome Camera

- Online UPS of desired rating

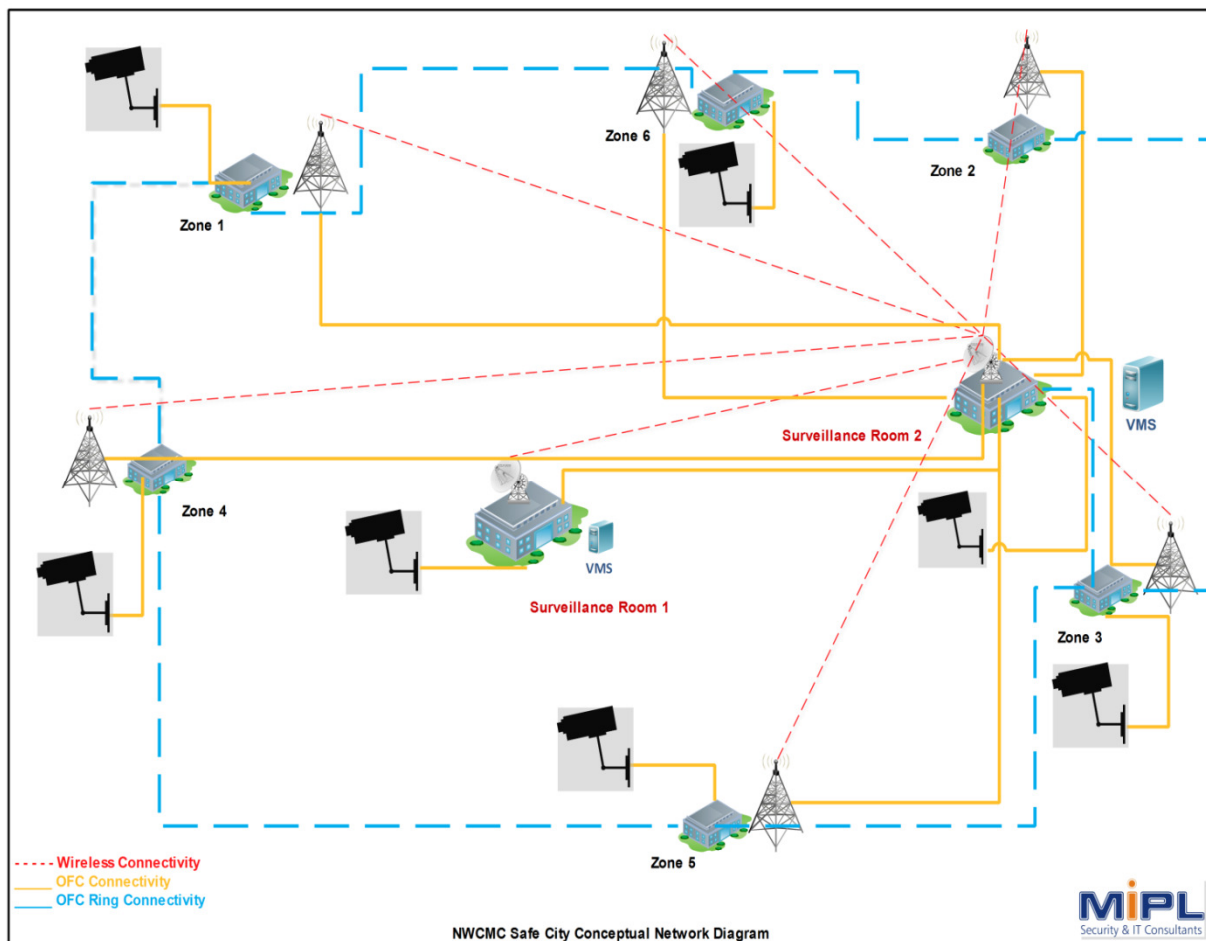


This is the centralize Commanding Center for Safe City Surveillance Cameras in brief.

The GPS based tracking System will consist of, but not limited to the following:

- GPS tracking device
- GPS tracking server
- User interface
- AVL software

Backbone Network - Conceptual representation



4.3 GENERAL SPECIFICATIONS

Proposed system shall be an open standard based integrated system aimed at providing high-speed manual/automatic operation for best performance. System should be easy to maintain. The OEM should give an undertaking that the offered software additionally supports cameras of 5 approved makes. **All equipment used in this system should support IP V6 protocol.**

Surveillance system shall use video signals from various types of indoor/outdoor CCD/CMOS colour IP cameras installed at different locations, process them for viewing on workstations/monitors at Central Control Room /local control rooms and simultaneously record all the cameras after compression using MPEG4/H.264 or better standard.

System shall have all IP CCD/CMOS Colour Video Cameras with Fixed as well as Pan Tilt and Zoom (PTZ) type cameras. All the cameras should be capable of day and night viewing under very low light conditions.

System should be complete with IP Cameras, Switch, Server with video management software for recording, storing and playing, AVL software, Colour Video Monitors, Mouse-Keyboard, Joystick, PC for System Administration/ Management/ Maintenance etc.

System should ensure that once recorded, the video cannot be altered or tampered, ensuring that the audit trail is intact for evidential purposes. All the data communications taking place within the network need to be AES (128 bit) encrypted and SSL authenticated so that any unauthorized access to the video data can be prevented.

System shall provide minimum storage for 24 hours X 7 days recordings of all the cameras and 30 days recordings of events based on alerts @ 25 FPS, 4 CIF quality using MPEG 4/H.264 compression techniques for all cameras.

The proposed Video Surveillance system shall provide video recording at 4CIF @ 25 frames/sec. The recording resolution and frame rate for each camera shall be user program able. It shall be possible to record camera views on continuous, scheduled and event triggered basis. The Area under surveillance shall be monitored from Local Control Room.

The system should provide facility for remote viewing to log on and view any camera from anywhere.

Power for all the field equipment will be conditioned using locally connected UPS at each camera location. If any equipment operates on any voltage other than the standard supply voltage (230 V AC single phase) and supply frequency, necessary voltage/frequency-conversion/correction device of approved make shall be supplied along with the equipment at no cost to NWCMC.

Power for all control room equipment would also be conditioned using a single line interactive UPS.

All the control equipment e.g. switch, passive networking items etc. shall be provided in a standard Network Rack in the control room of required size.

All the indoor cameras& control equipment shall be suitable for operation from 0 degree C to 50 degree C and relative humidity upto 95 % non-condensing. Cameras& other equipment, meant for outdoor installations, shall be suitable to work from (-) 10 degree C to (+) 50 degree C with RH up to 90% non-condensing. This temperature range may be achieved with blower unit if required.

Possible applications of the proposed system should include tracking movements/ verification and recognition, through high quality images, of persons and objects including vehicles. The recordings of the scene of the Jurisdiction shall be helpful in case of enquiries etc. in establishing the truth.

Bidders should confirm that all recordings will be admissible as evidence in any court of law and should be able to demonstrate the following standard features: Image Quality, tamper-proof image recording and storage, tamper-proof export, digital watermarks/time/date stamps/checksums & full audit trail.

Manufacturer must have service support across the country and specifically in the states where the current set of plants are located.

Bidder should be able to demonstrate to the technical committee the complete functioning of the system along with the software deliverables as described in this document during technical evaluation. The complete working system comprising of one outdoor P/T/Z Camera with controller, one fixed camera and System software with Analytics, PC/workstation, wireless transceivers, etc. should be demonstrated to the NWCMC technical team & the Consultant.

To the extent possible, Cameras should be installed on the existing structures, buildings, flood light towers, watch towers etc by providing necessary brackets, hooks, nuts & bolts. If it is necessary to provide separate poles to mount the cameras at desired locations, payment for poles upto 7m and 20m wherever required will be made separately.

Monitoring, Control & Storage application software should support:

1. Optimized decoder and display engine
2. Sixteen simultaneous connections for recording and monitoring without lag & with different monitor layouts
3. Multiple screen layouts and full screen display
4. Multi-channel monitoring and recording simultaneously
5. Manual, event driven and scheduler recording mode
6. Remote digital output and input indicator
7. Zero waiting database searching and event preview
8. Remote PTZ camera control
9. Hard disk storage indicator and alarm
10. High compression ratio and storage capacity
11. Audio monitoring/recording support
12. Simultaneously multiple window controlling
13. Auto launcher after PC rebooting
14. Real-time monitoring, PTZ control & Recording
15. Simultaneous real-time monitoring and audio and video recording
16. High quality video, upto full-screen display

17. High compression ratio
18. Smart play back
19. Triggered event browsing with at least 9 preview video windows
20. Fast data base searching
21. Auto alarm in different ways
22. Account-password protection
23. Different recording modes: Event-driven, Scheduled and Manual recording for each camera
24. The software should display video in 16 channels on each screen and 32 channels using sequencing on single PC
25. The software should support the video server/ encoder and IP camera for future up gradation if required
26. The software should support the MPEG- 4 video compression
27. The software should support a frame rate of 25 frames per second for PAL at 4 CIF resolution for at least 12 cameras.
28. The software should support AVI file format synchronized with audio/video, printer and bitmap for snapshots.
29. The software should support minimum resolution of 352 x 288 and maximum resolution of 704 x 576
30. The software should support minimum three detection windows for each channel with intelligent adaptive motion detection by modifying the sensitivity and object size.
31. The software should support Manual, event driven and scheduled, video only, audio only, or both recording modes
32. The playback should support various schemes with
 - a. Date and time interval
 - b. Event triggering with preview for every camera.
33. The playback module should offer various controls like play, stop, pause, fast forward, slow forward, pull-bar, zoom in, zoom out and speed ranging from 1/16 to 16 times.
34. The software should support various alarm features like monitoring 16 channels I/O, in-image motion detection indication, local warning sound etc.
35. Auto run facility at Startup – Software should be capable of auto start up state right after Windows boot up

Features of Video Analytics Software(VAS)

1. VAS should be Open IP-Surveillance product, enabling simultaneous digital video recording from network, and analog devices, intelligent video analysis and remote access to live and recorded images from any networked computer. VAS OEM should give an undertaking that devices from reputed camera manufacturers can be used for video analytics.

2. VAS should be able to automatically track and classify objects such as cars and people and push content to security personnel as required.
3. VAS should be capable of Real-time analysis of connected cameras to detect abnormal activity and Security threats.
4. VAS should jointly and simultaneously be able to manage video analytics and video management as one product.
5. VAS should have Automated PTZ camera control for zooming in on interesting events without the need for human intervention.
6. VAS should be completely scalable, with a many-to-many client-server model allowing multiple physical systems to be used in an array of Servers. The server specified in the tender document indicates only the minimum requirements. However, bidder should offer the Server system to suit the video analytics requirements specified herein.
7. VAS should have the flexibility of connectivity and managing network and analog, Fixed & PTZ IP cameras
8. VAS should be able to filter large amounts of video and focus on human attention appropriately
9. VAS should have maximum scalability and enable easy migration path from analog to intelligent digital network.
10. VAS should support display of time Line, Customizable Site Map, Live Video, Video Playback, Integrated Site Map, Remote Live View, Multi-site capability, Encryption, Watermarking and Event based Recording
11. VAS should be able to do video analytics based on defined policies pre-fed at the time of installation. It should have specific features like Motion & Blackout masking, Perspective settings, environment selection, map configurations, disk usage limits, footage expirations and software health monitoring
12. VAS should allow to add, edit, delete or disable and enable Policies.
13. The definable and available triggers should be for
 - i. Vehicles Moving – should activate alarm if it detects Vehicles moving in the scene and passing through the Alarm Mask. Object Direction may be used to further filter alarms, as well as Object Speed, Object Size.
 - ii. Vehicles Parking – should activate alarm if vehicles are parking in Alarm Mask. The Length of Time field in seconds or minutes may be used to specify how long vehicles are able to park before the alarm
 - iii. Vehicles Starting to Move- should activate alarm if it detects a vehicle starting to move from a stopped position. If a parked car begins to move, an alarm will sound. Object Direction, Object Speed and Object Size may be used to
 - iv. further filter alarms.
 - v. People Moving- Similar to the Vehicles Moving trigger, but should apply to People.

- vi. Anything Moving- Similar to the Vehicles Moving trigger, but should apply to any objects which are moving (People, Vehicles, Unknown).
 - vii. Camera Obstructed / Out of focus - should activate alarm if the field of view is obstructed or goes out of focus.
 - viii. Cord Cut: Will sound alarm if the video signal is lost.
 - ix. Hardware alarm Input- Should be able receive signals from external devices through alarm I/O and act accordingly.
 - x. Unknown Starting- Similar to Vehicles Starting to Move trigger, but should apply to objects which have not been classified as Human or Vehicle.
 - xi. Unknown Moving- Similar to Vehicles Moving trigger, but should apply to objects which have not been classified as Human or Vehicle.
 - xii. Unknown Parking- Similar to Vehicles Parking trigger, but should apply to objects which have not been classified as Human or Vehicle.
 - xiii. Object left Behind- should sound alarm if objects are discarded, such as a bag on a sidewalk.
 - xiv. Object Removed- Similar to Object left Behind trigger, but should apply to objects removed.
14. Software should have Real-time Video Analysis features like:
- a. Motion Tracking
 - b. Object Classification
 - c. Object Counting (people/vehicles)
 - d. Object Persistence
 - e. Alarm Policy Settings:
 - f. Alarm on object type
 - g. Alarm on object direction
 - h. Alarm on camera manipulation
 - i. Automatic Alarm Response:
 - j. Automatic PTZ control
 - k. Audible Siren
 - l. Alarm I/O (relay)
 - m. Text to Speech
 - n. Email
 - o. FTP
 - p. Event based search
15. The Automatic vehicle tracking devices should combine both active and passive tracking abilities: when a cellular network is available and a tracking device is connected it transmits data to a server; when a network is not available the device stores data in

internal memory and will transmit stored data to the server later when the network becomes available again.

16. Typical Architecture - Major constituents of the GPS based tracking are

GPS tracking device: The device fits into the vehicle and captures the GPS location information apart from other vehicle information at regular intervals to a central server. The other vehicle information can include fuel amount, engine temperature, altitude, reverse geocoding, door open/close, tire pressure, cut off fuel, turn off ignition, turn on headlight, turn on taillight, battery status, GSM area code/cell code decoded, number of GPS satellites in view, glass open/close, fuel amount, emergency button status, cumulative idling, computed odometer, engine RPM, throttle position, and a lot more. Capability of these devices actually decide the final capability of the whole tracking system.

GPS tracking server: The tracking server has three responsibilities: receiving data from the GPS tracking unit, securely storing it, and serving this information on demand to the user.

User interface: The UI determines how one will be able to access information, view vehicle data, and elicit important details from it.

17. The automatic vehicle locator unit have to be installed with GPS receiver to all 25 vehicles (mentioned in the tender document) , and to be linked with Nanded city Police control room.
18. The whole system has to be integrated to work as a full-fledged solution so that when an emergency call emerges from a public, it has to be identified from where the call emerges. It has to be located in the digital map and nearby patrol vehicle as shown in AVL system has to be diverted. The call has to be recorded in the log register at Central control room and details have to be entered in the computer in a predetermined format (template).
19. It involves GPS based Automatic Vehicle Tracking System, electronic form management and integration with digital land base map. It is intended to use Geographically Information System (GIS) and Global Positioning System (GPS) technologies to track the Police Van/Vehicle and graphically display its position on the digital map of Nanded City at the Central Police Control Room It is proposed to carry out recording of all calls received from citizen of Nanded. Each individual call will be recorded and that call will be forwarded to the dispatch operator on the LAN along with the location details.

Dispatch operator will locate nearest Police Van/Vehicle on the digital map and forward it through GPRS/CDMA channels.

4.4 DETAILED SCOPE OF WORK

- i. Supply, design, installation, testing and commissioning of Hardware and Software as per system design and schedule of quantity.
- ii. Configuration of Hardware, Networking devices and Software as per system design & site requirement.
- iii. Training on system operation to staff at the site.
- iv. Detailed training on System maintenance at site as well as at the premises of the system provider.
- v. City Surveillance & VTS networking and integration system to be supplied and installed should be covering all the areas mentioned above.
- vi. The control station in the Main SP office should be the heart of the City Surveillance & VTS. Major equipment inside this control room would consist of but not limited to Optical Fiber Receivers, Server, PC/Workstation along with video wall, monitors for viewing.
- vii. Architecture of the system should be fully modular and should be designed in a manner to enable the complete system to be gradually enhanced and enlarged according to the future operation, safety and security requirements of respective bottling plants.
- viii. The Cameras should be capable of marking at least 16 areas for motion detection purpose within the plants within the range of the camera.
- ix. Necessary alarm /indication shall be raised at the security cabin/at the monitoring station indicating that there is motion in the marked area.
- x. The City Surveillance & VTS is desired for NWCMC for constant and remote video surveillance of earmarked locations.

4.5 GENERAL

- i. The system shall be designed by selecting high-grade components of proven quality and proper design of system electronics to ensure minimum down time.
- ii. The Video Surveillance and AVL software shall be governed by the operating system running in a real time mode and shall be able to meet the minimum functional requirements as specified.
- iii. The system shall have an extensive set of self-diagnostic routines, which shall locate and identify the system failure at least up to individual equipment level.
- iv. The system shall be internally protected against system errors and hardware damage resulting from electrical transients on power wiring and signal wiring which may be generated by switching large electrical loads or by power line faults and connecting & disconnecting devices or removing or inserting printed circuit boards in the system .

- v. All PCs provided should be of reputed make and latest model. Assembled PCs are not acceptable. Bidder should specify his criteria for capacity planning & sizing, performance criteria for arriving at the recommended configuration.
- vi. Following authorizations shall be made available from OEMs:
 - a. Technical compliance to the specifications and authorization for participating in the tender on manufacturer's behalf.
 - b. Authorization for providing copy of test reports complying the specifications at the time of inspection.
 - c. Authorization that the items quoted by the tenderer are in production and would be supported for service for at least 5 years from the date of the tender.
- vii. All products such cameras, active components etc. shall have quality system compliance with the following standards:

 I.S./ISO 9001/EN 29001; CE / FCC / UL Certified;EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-6-1, EN 61000-6-2, FCC Part 15 Subpart B Class B, ICES-003 Class B, VCCI Class B, C-tick AS/NZS CISPR22 , EN 60950, Power supply: EN 60950/UL/ CSA
- viii. All the equipment of external fitment should be weather proof IP-66/ NEMA 4 complied and vandal proof / vermin proof.
- ix. Manufacturer must provide reference list of installation for similar products/ components.
- x. The warranty shall consist of repairing or replacing defective parts for a period of 1 year from the date of supply with 4 years of post-warranty comprehensive AMC.

4.6 SPARES

Commissioning Spares:

All commissioning spares required for installation, testing and commissioning of system shall be at bidder's scope.

Warranty Spares:

All spares required for maintaining the complete system during the warranty period of 12 months shall be at bidder's scope.

Post Warranty Spares (During comprehensive AMC)

All spares required for maintaining the complete system during the comprehensive AMC period of 48 months shall be at bidder's scope.

4.7 APPROVAL OF DRAWINGS

Successful Bidder after placement of order shall be fully responsible to get all drawings approved from NWCMC before supply.

Approval of drawings by NWCMC does not relieve the Successful Bidder from his responsibility of performance guarantee of equipment covered under this tender.

4.8 SCOPE OF WORKS-INCLUSIONS AND EXCLUSIONS

Works Included: The Scope of work has been covered in the above specifications in general. However, the Successful Bidder shall be responsible to complete the works in all respects and in doing so, provide/supply all facilities not covered above specifically, but nevertheless required for the satisfactory performance of complete system.

Works Excluded: Existing Watch towers, Light poles, Building tops can be considered for mounting camera and other equipment. Additional poles/towers etc if required will be paid separately.

4.9 OPERATING TERMS

The Successful Bidder should maintain the whole system on an ongoing basis, during warranty period of one year & subsequently during the comprehensive Annual Maintenance Contract(AMC)after the completion of warranty period for 4 years. During warranty period all materials / parts / services as required to maintain the system on an ongoing basis is included in the scope of the job and no extra payment will be made by NWCMC.

Provide service support during business hours, if and when required, besides such other support like a 24/7 telephonic assistance etc., as may be required so that the system operates on a continuous basis.

Successful Bidder will be the single point contact for NWCMC for all support related issues with respect to hardware/software installed by them. If any third party help is required in resolving any issue, it will be the sole responsibility of the bidders to arrange for such help.

4.10 PERFORMANCE TESTING AND WARRANTY

The Successful Bidder shall carry out the performance test run of the complete system at site after satisfactory installation/ implementation under his supervision. Training of operators should be as per details mentioned in this document after commissioning of the system without any extra cost to owner.

The system provided should be guaranteed / warranted for any kind of manufacturing defects and satisfactory performance for a period of 12 months from the date of acceptance / final sign off obtained from concern official of NWCMC.

4.11 COMPRHENSIVE ANNUAL MAINTENANCE CONTRACT (AMC) POST WARRANTY

- i. Complete system will be covered under post warranty Comprehensive AMC as per rates quoted in the price bid for a period of 48 months from the date of completion of warranty. The post warranty comprehensive AMC shall be a separate annual contract for each of the 4 years period and shall be signed at beginning of the respective period. The post warranty comprehensive AMC rates quoted in price bid for 4 years shall be included in the evaluation.
- ii. During the post warranty comprehensive AMC period all software/ services etc. as required to rectify any defect, will be provided by the successful bidder at no extra cost to NWCMC. Material / hardware /spares as required for such maintenance would also be provided by the bidder. No extra amount is payable by NWCMC for this post warranty AMC other than quoted AMC rates.
- iii. Comprehensive AMC comprises of the following services as a minimum
 - a. Routine maintenance service: This is an on-site maintenance, which should be carried out four times in a year. Purpose of visit is to check system healthand problem solving.
 - b. Breakdown maintenance service: In case of system breakdown, Successful bidder shall depute Engineers to restore the system at the earliest, within 24 Hours.
 - c. Software support and technical services: Software additions / modifications, technical assistance to Purchaser's Engineers, technical discussions with Purchaser's Engineers /Technicians at successful bidder's facility etc. are included.
 - d. The personnel deployed to site shall have thorough knowledge of the system and at least two years of experience in maintenance of similar system. An experience certificate to this effect to be handed over to the Site-In-Charge of respective plant.
- iv. Quarterly prorated payment of finalised AMC amount will be made after successful completion of period of respective post warranty AMC, should NWCMC enter into AMC for that respective year.
- v. NWCMC reserves the right to order for the post warranty AMC along with the main order or after the completion of the warranty period of one year, and such decision solely is at NWCMC's discretion. NWCMC reserves the right to sign the post-warranty AMC for all 4 years or part of it or none.

4.12 UPGRADES

Any upgrades to software with respect to firmware and revisions during the period of contract, warranty and AMC should be provided by the successful bidder at no extra cost to NWCMC.

4.13 TRAINING AND HANDHOLDING

The Successful Bidder will train NWCMC personnel at two levels

- (a) Training for the control room operator and security staff
- (b) Training for NWCMC supervisory staff

4.14 SCALABILITY

The system design shall permit the on-line addition of new system /subsystems (new work station, peripherals, cameras, encoders etc.) with no disruption to either the operation or system communications for future expansion. The offered software should have in-built capability / provision to take care for future expansion and new services & features etc. The user configurable menu driven modules should be available in the software for any addition/deletion/change in the Plant configurations. No hard coding is allowed for the above functionality. Surveillance System should be scalable to meet additional business, safety and security requirement of the NWCMC.

The system should be scalable to interface with NWCMC network/Switches.

All system communications shall be based on the ISO, Open system Interconnect (OSI) reference model. All communication solutions should be Ethernet Based.

4.15 NWCMC DELIVERABLES /SCOPE

NWCMC shall make available the sites to the Successful Bidder to carry out the job from administrative point of view.

Successful Bidder should specify the space requirement as infrastructure for implementing his system based on which, NWCMC shall ensure adequate space for placing the computer and other related equipment.

4.16 SYSTEM ACCEPTANCE CRITERIA

The system will be accepted by NWCMC based on the following criteria:

All systems to be verified operational as defined in the Scope of Work above.

Surveillance & VTS system installed and functioning, as described in the FDS submittal.

All manuals and drawings are delivered to NWCMC.

All software licenses are delivered to NWCMC. Master Server license, Software analytics license, camera licenses, AVL license should be handed over to NWCMC.

5 SPECIFICATION OF VARIOUS HARDWARE AND SOFTWARE

5.1 Fix Camera	
Feature	Specification
Image Sensor	1/3" CCD/CMOS Sensor –progressive scan 1.3MP or better
Lens	F1.2 (wide) - F2.1(tele), autofocus, automatic day/night Horizontal angle of view: 50° - 5.4°
Light Sensitivity	Color : 0.5 lx at 50 IRE, F1.2, AGC high Black & White : 0.2 lx at 50 IRE, F1.2, AGC high
Video	
Signal System	PAL
Video compression	MPEG-4 / H.264
Total Pixels	1280x1024
Image Settings	wide dynamic range (WDR) ,Electronic Image Stabilization EIS); Auto/ One-push WB/ ATW/ Manual White Balance; ON/OFF switchable Flickerless operation; Auto Electronic Shutter;
SNR	>50db
General	
Approvals	UL/ CE & FCC and EN
Networking	
Connectivity	10/100 mbps Ethernet with CAT-6 cable
Protocol	IPv4, TCP/IP, HTTP, HTTPS, UPnP, RTSP/RTP/RTCP,IGMP,SMTP,FTP,DHCP,NTP,DDNS,DNS and PPPoE
Electrical	
Power Supply	AC 10-24 volts or DC 7 -24 volts
Control Interface	RS485 or RS422
Connectors	DC jack Terminal block for 2 alarm inputs, 1 output

5.1 Fix Camera	
Feature	Specification
Video Output	1Vp.p.75Ω composite BNC connector
Environmental	
Temperature	0°C to 50°C (Operating); -10°C to 60°C (Storage)
Operating Humidity	20%~90%RH (non-condensing)
Mechanical	
Casing	Integrated Outdoor Weather proof vandal proof casing with IP66. Make to be same as that of the camera.
Outdoor Mounts	Max Load 9 kg. Adjustable Head with 360 degrees pan, 180 degrees tilt. Make to be same as that of the camera.
Approved make	Sony, Panasonic, Pelco, Bosch, Verint

5.2 PTZ Camera	
Feature	Specifications
Image Sensor	1/4" CCD/CMOS Progressive scanning
Lens	F 1.6 – 4.5, f=3.4 mm wide 119 mm tele, Angle of View(H) 52 degree Wide,1.8 degree Tele or better; auto focus;
Light Sensitivity	Color : .05 lx (50IRE, F1.2, AGC High) Black & White : 0.01 lx (50IRE, F1.2, AGC High)
Shutter Time	Auto / Manual selectable (1/10000s –1.50s@PAL)
Zoom	36x optical and 12x digital
Pan Range	Rotation Angle 360° Endless; Speed 120°/sec
Tilt Range	Manual/programmable; speed : 180°/sec; angle :0-180°
P/T/Z	Auto PAN and auto Patrol mode
Day/Night	Yes
Video	
Signal System	PAL
Resolution	HDTV 720p 1280x720 to 320x180
Video Compression	H.264 (MPEG-4 Part 10/AVC) Motion JPEG
Video Streaming	Multiple, individually configurable streams in H.264 and Motion JPEG Controllable frame rate and bandwidth VBR/CBR H.264

5.2 PTZ Camera	
Feature	Specifications
Image Settings	wide dynamic range (WDR) , Electronic Image Stabilization EIS); Auto/ One-push WB/ ATW/ Manual White Balance; ON/OFF switchable Flicker-less operation; Auto Electronic Shutter; >6 Z Privacy Masking; 64 or more predefined Programmable preset positions.
Frame Rate	H.264: Up to 30/25 fps (60/50 Hz) in all resolutions Motion JPEG: Up to 30/25 fps (60/50 Hz) in all resolutions
SNR	>50db
Approvals	UL/ CE & FCC and EN
Networking	
Connectivity	10/100 mbps Ethernet with CAT-6 cable
Protocol	IPv4, TCP/IP, HTTP, HTTPS, UPnP, RTSP/RTP/RTCP,IGMP,SMTP,FTP,DHCP,NTP,DDNS,DNS and PPPoE
Electrical	
Power Supply	AC 19-28 volts and DC 24-36 volts
Connectors	DC jack Terminal block for 2 alarm inputs, 1 output
Control Interface	RS485 or RS422
Environmental	
Temperature	0°C to 50°C (Operating); -10°C to 60°C (Storage)
Operating Humidity	20%~90%RH (non-condensing)
Mechanical	
Casing	Integrated Outdoor Weather proof vandal proof casing with IP66. Make to be same as that of the camera.
Outdoor Mounts	Max Load 9 kg. Adjustable Head with 360 degrees pan, 180 degrees tilt. Make to be same as that of the camera.
Approved make	Sony, Panasonic, Pelco, Bosch, Verint

5.3 Server	
Features	Specifications
Processor	Intel Xeon Quad Core, 2.4 GHz or more with FSB Frequency more than 1060MHz
Chipset	Suitable Intel chipset

5.3 Server	
Features	Specifications
Memory	8GB, Expandable up to 20GB or more
Expansion Slot	Standard Configuration
I/O Port	Standard IO Ports with 4 USB 2.0 connectors
Bays	Up to 4 hot swappable SATA or SAS bays
Display Controller	Compatible display controller with at least 64MB on-board memory
HDD	10K RPM, SAS or SATA hard disk
Internal Storage	2 TB
Ethernet	Gigabit Ethernet controller
OS	Windows (32 or 64 bit) / Linux
RAID 5 support	Hardware RAID with support for RAID 0, 1, 5, 6 & 50
Anti-virus Software	Latest Software
Approved Make	HP, Dell, IBM

5.4 Workstation	
Features	Specifications
Processor	Intel Core 2 Duo Processor 3 GHz; 4 MB L2 Cache; 800 MHz FSB or better
Chipset	Suitable Intel chipset
Memory	1GB or better 667MHz DDR2 ECC FB-DIMM memory
Expansion Slot	Standard Configuration
I/O Port	Standard IO Ports with 4 USB 2.0 connectors
Bays	Standard Configuration
VGA Card	NVIDIA Quadro FX5600 or equivalent
Display Controller	Compatible display controller with at least 64MB on-board memory
HDD	SATA @ 7500 RPM – 8MB Cache
Optical Drives	16x Super Drives with double-layer support (DVD+R DL/DVD±RW/CD-RW)
Storage	500GB or more
Video Accelerator	Matrox RT.X2 Card or equivalent
Ethernet	10/100/1000, Auto Negotiating Ethernet controller
Os	Windows XP SP3 (32 or 64 bit)
Monitor	42" LCD @ 1280x1024 (Refer detailed Specs provided in the document)
Approved Make	HP, IBM, Dell

5.5 Storage System	
Features	Specifications
Operating System	Microkernel based; should not be based on general purpose operating system like Windows, Unix/Linux etc.
RAID controller	Dual active, hot-swappable controllers
Cache	1 GB cache per controller with 2 GB upgrade (battery-backed)
Host interface	At least 8 x FC ports
Drive interface	Two 6 Gb SAS drive ports
Supported drives	6 Gbps SAS 3.5" drives: 300 GB 15k rpm, 450 GB 15k rpm, 600 GB 15k rpm 1 TB 7.2k rpm Nearline, 2 TB 7.2k rpm Nearline 600 GB 15k rpm SED 6 Gbps SAS 2.5" drives: 146 GB 15k rpm 300 GB 10k rpm 600 GB 10k rpm 500 GB 7.2k rpm Nearline 300 GB 10k rpm SED 1 TB 7.2k rpm
RAID levels	0, 1, 3, 5/6
Storage partitions	Support for up to 128 storage partitions (levels: 4 standard with upgrades to 8, 16, 32, 64, 128)
Maximum drives supported	Up to 192 drives—high performance SAS drives, nearline SAS drives, and SED SAS drives
Raw disk Scalability	50 TB usable capacity using SATA drives
Fans and power supplies	Dual redundant, hot-swappable
Rack support	2U, 19-inch, industry-standard rack
Management software	OEM Storage Manager
SAN support	Supported FC switches and directors, and IP switches
Approved make	HP, IBM, Dell, iomega

5.6 Video Wall	
Features	Specifications
Diagonal size	46 inches or above
Resolution	1366 X 768

Luminous flux	500 Cd/m2 (typ)
Contrast	3000:1
Input / Output	1 x DVI –D in/out, VGA, Composite etc.,
Direct Ethernet access	Control through standard Ethernet browser. Easy and fast firmware upgrading over Ethernet
Integration to third party Equipment	External video wall control from different Devices

5.7 VMS&IA	
Features	Specifications
Functional Requirement	VMS based on the open architecture which facilitates integration with other IT systems with the help of APIs (distributed free of charge)
Platform	Windows / Unix / Linux
Functions	Event handling, motion detection,
Compatibility	The VMS should be built on the open standards and shall be compatible with products from industry leading manufacturers
Recording	<ul style="list-style-type: none"> Should record audio / video Continuous recording, by trigger (motion or alarm), by schedule
Storage	<ul style="list-style-type: none"> Distributed, fault tolerant database architecture Multi-level storage: should support multi level storage (live recording on primary disk, archiving on secondary, and so on) should delete video after configurable duration
Video Search	<ul style="list-style-type: none"> Should be able to search video based on date / time, camera. Should have advanced / smart / quick search function Should be able to export searched video to standard video codec (or with video player in case of proprietary format)
Viewing	<ul style="list-style-type: none"> Simultaneous viewing and recording from various cameras by multiple users Multi Monitor viewing Camera sequence mode Control PTZ function of PTZ camera The VMS should have viewing client (not applicable incase of web based VMS) to enable the feed display on the workstation / remote location Drag and drop camera viewing

5.7 VMS&IA	
Features	Specifications
Event Management	· Register event, associated video, and alert operator on screen with audio
	· Motion detection, sound detection, camera tampering events should be alerted to the operator
Camera Management	· Show connection status of cameras, alert operator in case of connection failure to any camera
	· Manage firmware upgrades, setting IP addresses
Security	User management, password management, user access level management
General Features & Specifications	Multi-map Presentation Options and User-Friendly PTZ Controls
	Graphic Video Footprints with Real-Time PTZ Controls
	Sensor Management Tools, Alarm Management Options, and data Editing
	Enhanced Displays for Video Forensics and Access to Video Archive Systems
	supports jpeg or bmp or gif data input.
	Capable of Managing an assigned area of interest
	Capable of Ingesting video and sensor inputs into an open architecture format, onto one screen
	Provides a monitoring capability of the video/ sensor subsystem, to be relayed to the key operations center
	Multi-site video surveillance, and command and control
	Provides a multiple-perspective geographic display of site locations with site-specific surveillance information including Sensor locations and alarm conditions.
	Provides a remote ability to set and/or modify operational characteristics of surveillance devices and storage
	Online control of Pan/Tilt/Zoom (PTZ) cameras, sensors,
	Ability to Record and Retrieve stored video.
	Integrated-alarm visualization rule and device control displays in either a single or double monitor format
	Ability to slue PTZ cameras to alarm-generated areas.
	Automatic tracking and classification of objects such as cars and people and push content to security personnel over local LAN as required.

5.7 VMS&IA	
Features	Specifications
	Capability of Real-time analysis of connected cameras to detect abnormal activity and Security threats.
	Capability to filter large amounts of video and support display of time Line, Customizable Site Map, Live Video, Video Playback, Integrated Site Map , Remote live view, Multi-site capability, Event based Recording all over local LAN
	Capability of video analytics based on defined policies pre feeded at the time of installations with features like Motion & Blackout masking, Perspective settings , environment selection, map configurations, disk usage limits, footage expirations, software health monitoring
	Definable and available triggers should be for : Vehicles Moving , Vehicles Parking, Vehicles Starting to Move, People Moving, Anything Moving, Camera Obstructed, Cord Cut, Hardware alarm Input, Unknown Starting, unknown Moving, Unknown Parking, Item left Behind, Item Removed, People Loitering.
	Motion Tracking, Object Classification, Mosaic (Camera image stitching), Object Persistence, Alarm Policy Settings, Alarm on object type, Alarm on object direction, Alarm on camera manipulation, Automatic Alarm Response, Automatic PTZ control, Audible Siren, Alarm I/O (relay), NAS or SAN support, Event based search
	Left-Object/Removed-Object Detection component that automatically detects objects in the field of view of a camera that have been left-behind, or that have been removed
	Perimeter Breach Detection component that automatically detects objects in the field of view of a camera that move from and to configurable regions
	Motion Detection component that automatically detects moving objects in the field of view of a camera, and is capable of filtering out movement in configurable directions and movement due to camera motion (e.g. from wind)
	A People Loitering Detection component that automatically detects objects that have moved

5.7 VMS&IA	
Features	Specifications
	continuously within the camera field of view for a configurable period of time.
	Ability to deploy the Alarm Components on PC computer servers or on remote, ruggedized, externally-mountable, stand-alone platforms
	Vehicles Moving – should activate alarm if it detects Vehicles moving in the scene and passing through the Alarm Mask. Object Direction may be used to further filter alarms, as well as Object Speed, Object Size.
	Vehicles Parking – should activate alarm if vehicles are parking in Alarm Mask. The Length of Time field in seconds or minutes may be used to specify how long vehicles are able to park before the alarm.
	Vehicles Starting to Move should activate alarm if it detects a vehicle starting to move from a stopped position. if a parked car begins to move, an alarm will sound. Object Direction, Object Speed and Object Size may be used to further filter alarms.
	People Moving - Similar to the Vehicles Moving trigger, but should apply to People.
	Anything Moving - Similar to the Vehicles Moving trigger, but should apply to any objects which are moving (People, Vehicles, Unknown).
	Camera Obstructed - should activate alarm if the field of view is obstructed.
	Cord Cut - Will alarm if the video signal is lost
	Hardware alarm Input - Should be able receive signals from external devices through alarm I/O and act accordingly
	Software should be an Open IP-Surveillance product, enabling simultaneous digital video recording from network, mega-pixel and analog devices, intelligent video analysis and remote access to live and recorded images from any networked computer.
	Software should allows to add, edit, delete or disable and enable Policies for video management
	Option of remote viewing and control over Blackberry® handheld to keep updated while in the field

5.7 VMS&IA	
Features	Specifications
	Software should be jointly and simultaneously able to manage video analytics and video management as one product
	Software should be able to store video to local hard disk, a RAID configuration or even a storage-area network (SAN).
	Software should support display of time Line, Customizable Site Map, Live Video, Video Playback, Integrated Site Map , Remote live view, Multi-site capability, Encryption, Event based Recording
	Option of On-screen digital Video tracking & digital zoom on tracked area
	Option of On-screen object follow thru within tracked area
	Management of Recorded video with On-screen time graph and multiple color coded event indicators for selective and simultaneous view of alarm and non alarm situations for quick viewing
	User friendly and time graph based selection for playback and instant archival of video events on external media
	On selection of specific area on video with specific date and time period , instant retrievals of all past events/ activities at this selected area should be retrieved and viewed instantly as a single video / movie clip
	Software should be intelligent and capable of automatically discriminating between objects like people, animals, vehicles
	Intelligent Object tracking in adverse weather condition and poor visibility
	Should be able to filter large amounts of video and focus human intelligence
	Multi-map Presentation Options and User-Friendly PTZ Controls
	Graphic Video Footprints with Real-Time PTZ Controls
	Sensor Display and Management Tools, Alarm Management Options
	Enhanced Displays for Video Forensics and Access to Video Archive Systems

5.7 VMS&IA	
Features	Specifications
	Supports jpeg or bmp data input
	Capable of Managing an assigned area of interest
	Capable of geo-referencing and supporting cross-cueing of sensors
	Provides a monitoring capability of the video/ sensor subsystem, to be relayed to the key operations center
	Multi-site video surveillance, and command and control.
	Provides site-specific surveillance information including sensor locations, coverage and alarm conditions
	Insertion and Deletion of Cameras & Sensors
	Provides a remote ability to set and/or modify operational characteristics of surveillance devices and storage.
	Online control of Pan/Tilt/Zoom (PTZ) cameras
	Capable of selecting and displaying simultaneous, multiple camera views for a single geographical location.
	Ability to Record and Retrieve stored video.
	Software should simultaneously perform and view following: record live video, playback recorded video, provide alert messages, viewing of live video from selected camera, Connected and live video analytics servers in the network, Time selection with motion and alert graph for recorded video data with different color indication for motion and alert indication along with video.
	Software shall offer a Maps application for importing maps, creating maps, linking maps, editing maps which enables a user to integrate interactive maps in the system. A map is a visual representation of where cameras are located at a site. When you view them in you can see where cameras are placed, and then you can click a camera to view live video and view following information.
	Software shall provide a Forensics software application that detects past and real-time security events using stored forensics data collected from surveillance video feeds.

5.7 VMS&IA	
Features	Specifications
	Software Forensics Analyzer shall allow the user to quickly search for and detect security events that occurred in the past. Examples include :
	a. Scan days and weeks of pre-recorded video within minutes
	b. Locate and extract information about potential security breaches
	c. Allow users to run regular queries to detect patterns.
	d. Allow users to apply any rule to any amount of collected or stored video data.
	Software shall provide the ability to set up security rules for surveillance cameras.
	Software shall detect, identify, classify, and track objects in real time. The software should then immediately generate alerts or alarms if user-defined security rules are violated
	Software shall support object-based algorithms and must be able to provide the following functionality :
	a. Learn the scene, Detect and track objects, Adapt to a changing outdoor environment, Ignore environmental changes including rain, hail, wind, swaying trees, and gradual light changes.
	b. Classify objects, Detect “enters”, “exits”, “appears”, “disappears”, “inside of”, “loitering”, “leave behind”, “taken away” events.
	c. Detect scene change events.
	d. Create object size and size change filters.
	e. Create salience/tide filters.
	Software shall classify objects groups as the following :
	Person, Vehicle, Unknown, Anything.
	Software shall be able to combine object tracking with object classification to allow the detection of specific objects in a region of interest, while ignoring other object types. The user shall be able to configure the following scene change event parameters for each camera:
	a. Scene change
	b. Partial view
	c. Full view

5.7 VMS&IA	
Features	Specifications
	Software shall have a sophisticated rule-based engine with powerful analytics capabilities that provides automatic event notification,
	Video distribution and process activation in response to events and behaviors.
	Software shall be able to create rules and responses based on digital or contact closure input events from external devices, such as Critical infrastructure-related events, Network connection failures, Fatal errors, Hard disk failures, Software service down, Video encoder failures, Security-related events, Digital input pin change, Video lost, Onscreen alarms. Maintenance-related events, User event notification using SMTP (Mail)
	Software shall be to perform the following tasks simultaneously:
	a. Digitizing and compressing video.
	b. Writing video to files on local hard disks and maintaining an accurate index of the stored video files.
	c. Deleting older video files as needed, to free up space to record newer video files.
	d. Selectively transferring recorded video to long-term storage media.
	Software shall be capable of managing online storage that is, online video shall be available for immediate playback. Storage shall be intelligently managed so that the video that is most likely to be requested by users will be retained online.
	Generating and managing system logs and audit reports, Defining the reporting level for system events generated by various services, Filtering log files and events
	A letter from the software developer confirming compatibility of VMS and VAS to Trend Micro anti virus software to be provided
Approved Make	Nice, Milestone, Verint

5.8 LCD screen	
Features	Specifications
LCD Panel Display Type	TFT Color Extended Graphics Array
LCD Panel Viewable Area	42"
Resolution	1920 x 1080
Internal Speakers	2
Front Controls	Power On/Off with LED
Scan System	Automatic NTSC/PAL; 31.5 ~ 80 KHz (Horizontal) ; 56 ~ 75 Hz (Vertical)
Video Connectors	BNC (Composite Video) – 2 channels (looping); 4-Pin Mini DIN (Y/C Video) DVI-I, 15-pin D-Sub for VGA/SXGA Audio Inputs PC Audio (mini jack) Video Audio (2 channels RCA - looping)
Power Input	AC Input – 100 to 240V ~ 0.5A, 50/60Hz
Power Output	DC Output – 12VDC, 0.5A
Power Cord	Detachable IEC
Display Mode	DVI-I/SXGA/XGA/VGA
Display Colors	16.7 Million
Luminance	400 cd/m ²
Contrast Ratio	DC 20,000:1 (1,000:1) (Typ.)
Viewing Angle	140° horizontal, 160° vertical
Operating Temperature	41° to 104° F (5° to 40° C)
Storage Temperature	-77° to 140° F (-25° to 60° C)
Operating Humidity	30% to 80% relative, non-condensing
Emissions	FCC: Part 15, Class B
Immunity	CE: EN55022: 1998/A1:2000/A2:2003
Safety	UL/cUL: 6500, EN60950-1:2001
Approved Make	Panasonic, Samsung, LG, sony

5.9 Wireless Access point	
Features	Specifications
Range	Transmission Range supported -Upto 30 km (18 miles) at 11 Mbps; 15 dbomni antenna supporting up to 2 kms Line of sight
Support	Windows based network SNMP management tool
Signaling Rate	>20Mbps over 20MHz channel
Security Protection	Video encryption using 128-bit AES with auto-key

5.9 Wireless Access point	
Features	Specifications
	rotation
Protection	Lightning / surge protector
Operating Temperature	-0° to +60° C ; -30° to +70°C (Storage)
Operating Humidity	5 to 95% at 40°C for 48 hours continuously without damage
Protocol	WIFI 802.11 a / b / g PHY with proprietary MAC protocol
Approved Make	Cisco, Motorola, Wavesight, Alvarion, Verint

5.10 Network Switch	
Features	Specifications
Switch	Layer-2 Managed with 24/48 Port 10/100/1000 Mbps N-way Fast Ethernet Switch with one 100Base-Fx (IPv6 Compliant)
Interface	24/48 10/100/1000BASE-TX Ethernet; 2/4 1000BASE-FX Ethernet
Console Ports	RS-232 Console Port
Switching Capacity	>3.5 Gbps
64-Byte Packet Forwarding Rate	>2.5 Mpps
MAC Address Table Size	8K
DRAM for CPU	32 MB
Packet Buffer	256 KB
Flash Memory	4 MB
Diagnostic LEDs	Power (Per Device); Console (Per Device); Link/Activity (Per Port); Speed Indicator (Per Port)
MTBF (Hours)	>225000 hours
Heat Dissipation	< 70 BTUs per hour
Power Input	100 to 240 VAC, 50 to 60 Hz Internal Universal Power Supply
Power consumption	< 25W
Operating Temperature	0° C to 40° C
Operating Humidity	5% to 95% non-condensing
EMI	FCC Class A, CE, C-Tick, VCCI
Safety	CSA International
Port Mirroring:	Support One-to-One, Many-to-One
VLAN	802.1Q Tagged VLAN; VLAN Group; Max. 255 VLAN; VLAN type: Static only
Quality of Service (QoS)	802.1p Quality of Service 4 Queues

5.10 Network Switch	
Features	Specifications
	CoS Based on: MAC DA Switch Port, TOS, DSCP
	Bandwidth Control -Port based (Ingress/Egress, Min.Granularity 64kbps)
Security	Port Security up to 10 MAC address per port
	IP-MAC-Port Binding (IMPB)
	Support ARP mode
	Support 500 Address Binding Entries per Device
	Traffic Segmentation
	Broadcast/Multicast/Unicast Storm Control
	CPU Interface Filtering
	SSH v2
Management	Web-based GUI
	Command Line Interface (CLI)
	Telnet Server
	TFTP Client
	SNMP v1/v2c/v3
	DHCP Relay
	DHCP Relay Option 60, 61
	SNMP Traps
	DHCP Auto-Configuration
	BootP/DHCP Client
	RFC 1213 MIB II
	RFC 1493 Bridge
	RFC 1757 RMON
	RFC 1643 Ether-like MIB
	RFC 2358 ETHERLIKE_MIB
	RFC 2674 802.1p
	RFC 1213 2233 IF MIB
	Private MIB
	RFC 2869 RADIUS extension standard
Features	IGMP Snooping:
	IGMP v1/v2 Snooping
	Support 256 Groups
	Port-based IGMP Snooping Fast Leave
	Spanning Tree:
	802.1D STP
	802.1w RSTP
	BPDU Filtering
	Loopback Detection (LBD).

5.10 Network Switch	
Features	Specifications
	802.3ad Link Aggregation:
	Max. 3 groups per device, 4 ports per group
	(2 groups for Fast Ethernet ports, 1 group for Gigabit ports)
Approved Make	Cisco, Dlink, HP-Procurve

5.11 Online UPS at command and control center	
Features	Specifications
Output Parameters	
Output Power Capacity	3 KVA online
Nominal Output Voltage	240V
Output Voltage Distortion	Less than 5% at full load
Output Frequency (sync with bypass)	47 - 53 Hz for 50 Hz nominal, 57 - 63 Hz for 60 Hz nominal
Crest Factor	up to 3 : 1
Input Parameters	
Nominal Input Voltage	230V
Input Frequency	50/60 Hz +/- 3 Hz (auto sensing)
Battery Paramters	
Battery Type	Maintenance-free sealed Lead-Acid battery with suspended electrolyte : leakproof
Typical recharge time	3 hour(s)
Mechanical Parameters	
Interface Port(s)	DB-9 RS-232, USB
Control panel	LED status display with load and battery bar-graphs and On Line : On Battery : Replace Battery : and Overload Indicators
Audible Alarm	Alarm when on battery : distinctive low battery alarm : configurable delays
Emergency Power Off (EPO)	Yes
Surge energy rating	480 Joules
Filtering	Full time multi-pole noise filtering : 0.3% IEEE surge let-through : zero clamping response time : meets UL 1449
Operating Temperature	0 - 40 °C
Operating Humidity	0 - 95%
Heat Dissipation	<300 BTU/hr

5.11 Online UPS at command and control center

Features	Specifications
Back-up	1 hr with SMF batteries at half-load
EMI	C-tick,CE,EN 50091-1,EN 50091-2,GOST,VDE
Environmental Compliance	RoHS compliant
Approved Make	APC, Emerson, Numeric

5.12 Cable Components

Features	Specifications
OFC Cable	Armoured, loose tube, Gel-filled, rodent resistant, direct burial type. Consisting of 6-core fibers of nominal diameter 8.8 micro meter to 9.8 micro meter and nominal cladding diameter 125 micro meter \pm 1; Attenuation: 1310 nm 0.4 db/km & at 1550 nm - 0.30 db/km; Cut-off Wavelength -1260 nm; Op. Temp.- -10 DegC – 70 DegC; Corrugated steel tape armor; Tensile Rating: 1200N; Max. Crush Res.: 3000N; ISO/IEC11801,TIA 568,ICEA640 compliant
LIU	LIU should be provided for terminating the optic fiber cables. It shall provide minimum bending radius and the splice trays shall function as a splice cover for pigtail splicing. It shall be made of aluminum with powder coating in compliance with latest industry standard. Cable glands shall be provided for secured anchoring of incoming cables. Rubber grommets shall be provided at the cable entry point for tight sealing. The splice tray shall be made of ABS materials. 12/6 Port
Pigtails	SC Type; 1 M; Insertion Loss < 0.5 db; Return Loss>40db; Bend Radius>30mm
Optic Fiber Connectors	Optic fiber connectors should be single mode SC/ST type with push-pull mechanism and fully in compliance with latest industry standard. Optic fiber connectors should be of standard make.
Optic Fiber Adaptors	Optic fiber adaptors should be suitable for single mode SC/ST type fiber cable connectors and shall be fully in compliance with latest industry standard. It shall be with snap/latch mechanism. Optic fiber adapters should be of standard make.

5.12 Cable Components	
Features	Specifications
Optic Fiber Patch Cords	Optic fiber patch cords should be suitable for single mode SC/ST type fiber cable connectors with plastic moulded plug type connectors in compliance with latest industry standard. Optic fiber patch cords should be of standard make. Min. Return Loss>50 db
Media Convertor	Should convert Ethernet port to fiber port and vice-versa; should support half and full-duplex operation; transparent to IEEE 802.1Q packets; rack-mountable; should have auto MDI/MDI-X & feature which should enable the fiber optic ports on the media converter to pass the 'Link' status of their connections to each other. When the media converter detects a problem with one of the ports, such as the loss of connection to an end-node, the media converter should shut down the connection to the other port, thus notifying the node that the connection has been lost.
OF Testing	<p>The manufacturer of the cabling system shall provide optical fibre testing procedures that clearly describe the tools and settings to be used to ensure correct measurements of the system. All the OF links have to be tested and must pass the acceptance criteria.</p> <p>Acceptability criteria shall be: The measured attenuation shall be lower than the acceptable link attenuation calculated (Formula: Allowable cable loss per km x Km of fiber in link + 0.4dB x No. of connectors = Maximum allowable loss)</p> <p>Testing shall consist of a bi-directional end to end by using either OTDR or Fiber Cable Tester. The system loss measurements shall be provided at 1310 and 1550 nanometers for single mode fibers.</p>
CAT6 Cable	Armored CAT 6 Cable; 4 pair UTP Cable 23 AWG Solid Bare Copper polyethylene insulation & armored. Applicable standard TIA/EIA 568.B; Insulation Resistance 100MOhm Capacitance <5.6 nf/100m
CAT 6 I/O	The RJ45 connector shall be screened to ensure protection against EMI and for Alien cross-talk compliance. It offers the 500 MHz performance required to be used to form a 100 meters Class EA channel as specified in ISO/IEC 11801:2002/A1:2008 and EIA/TIA 568 B2-10. All outlets fitted with shutters.

5.12 Cable Components	
Features	Specifications
Copper Testing	<p>The manufacturer of the cabling system shall provide copper testing procedures that clearly describe the tools and settings to be used to ensure correct measurements of the system. The following parameters have to be tested:</p> <ul style="list-style-type: none"> · Length · Attenuation · Pair-to-Pair Near-End Cross Talk (NEXT) · Power Sum NEXT · Far-End Cross Talk (FEXT) · Pair-to-Pair Equal Level Far End Cross Talk (ELFEXT) · Power Sum ELFEXT · Attenuation to Cross Talk Ratio (ACR) · Power Sum ACR · Propagation delay and Delay Skew · Return Loss. · All links must be characterized up to 100 MHz
Rack 6U	19" Network Rack with Cable Managers & 1 Fan
Power Cable	3-Core, 2.5 sq mm, multi strand with annealed electrolytic copper conductor with resistance > 8.2 Ohm/Km; PVC insulated (0.3 mm inner+1.8 mm outer sheath) armoured with galvanized steel wire with 90% coverage; IS 694:1990 reaffirmed 1995 or latest compliant
PTZ (Data) Control Cable	2 pair twisted Cable 23 AWG Solid Bare Copper polyethylene/PP insulation.
Approved Make	Polycab, Finolex, Dlink, Digilink, Molex, Systimax, TycoAmp, R&M, ADC KRONE, RR, RPG, L&T, Anchor, Havells

5.13 AVL and Database Server	
Description	Parameter
Processor	Dual Quad-Core Intel Xeon 2.66 GHz or above,
DDR RAM with ECC	8 GB RAM with ECC expandable to 16GB

5.13 AVL and Database Server	
Description	Parameter
Hard Disk	Hot swappable hard disk, 3*500GB HOT PLUG SAS HARD DISK @ 15000 rpm, RAID 5
Graphics	Onboard
Display	22" Wide LCD/ TFT monitor
Keyboard	PS/2 or USB Keyboard
Optical drive	DVD RW
Ethernet Card	Integrated dual gigabit Ethernet
Mouse with Pad	PS/2 / USB Optical or Laser
SCSI Interface	Raid 5 controller with Battery backed Cache
Expansion Slots	PCI, PCIE etc.,
I/O ports	Standard I/O ports
Cabinet	Rack Mountable 2U
Power Supply	Hotswap Redundant Power supply
Operating system	Database server to have Windows 2008 Server, Database server shall have MS SQL 2008 AVL server to have suitable OS and Database (Appropriate User License has to be added in respective servers)
Server management Software	To include features for system health monitoring, server maintenance, etc.
Anti virus software	To be included with 3 years subscription
Rack	Suitable Rack has to be provided to accommodated the servers, other HW and accessories
GIS/AVL Software	AVL & GIS Viewing Software with 5 user license to be added in the Server price. Additional AVL Software license for single user (To be quoted separately in optional item)
Approved Make	Dell , HP, IBM

5.14 GPS receivers with Modem	
Parameter	Specification
General	
Tracking channels	20 channels
L1 Frequency	1575.42Mhz C/A code
Acquisition time	
Cold Start	35seconds (typical) Time To First Fix

5.14 GPS receivers with Modem	
Parameter	Specification
	(TTFF)
Warm Start	40 seconds (typical) with current almanac, position and time
Hot Start	10 seconds TTFF with current almanac, position, time and ephemeris
Re-acquisition time	
General	1 second
Maximum Blockage	Upto 30 seconds
Position accuracy	Position horizontal +/- 10 meters or better
Velocity	0.1meters/ sec
Satellite data collection	2seconds to 12 seconds for synchronization. Continuous data collection and parity checking on all twelve channels
Position solution	2D position, velocity and 47 geodetic datum to be supported
Position update rate	1 seconds
Application Interface Messages	NMEA, UDP/IP, SMS, SMTP, HTTP
Antenna	SMA antenna
Maximum vehicle Dynamics	500m/sec
Environmental	
Operating Temperature	0 deg C to 55 deg C
Storage temperature Range	-30deg C to 70 Deg C
Humidity	95% non condensing 40 deg C
Altitude	18,000meters
Electrical	
Power	Power derived from Radio modem (tenderer to specify the voltage)
Power Consumption	0.9 Watts or better
Power connector	Any standard type connector
Back up power	battery inside housing (Tenderer to specify the voltage)
Mechanical	
Cable length	Suitable interconnecting cable with connectors to be specified
Mounting	Magnetic base
Housing	Water resistant plastic

5.15 GSM Modem	
E-GSM, GPRS 900/1800 Dual Band Module.	
Modem should support interface for GSM –GPRS Communication network.	
Modem should support AVTS application.	

5.16 Automatic Vehicle Location (AVL) SYSTEM SOFTWARE	
The AVL software used for the vehicle tracking application.	
The AVL software shall log in the vehicle reports coming from more than two repeater sites through their respective base modems	
The software shall allow the dispatch controllers to select any desired zone and view the vehicles on their respective monitors.	
The software shall provide the display of vehicle location on maps, logging of vehicle movements and provide the performance reports of the vehicle and drivers in a spreadsheet format	
The movement of vehicles can be played back at any time by choosing date and vehicle IDs.	
The movement of vehicles can be played back at any time by choosing date and vehicle IDs.	
The above two components are connected through TCP/IP protocol and LAN available to operating system.	
It shall be possible for several IOPs and several viewers to be networked Together	
It shall be possible for a viewer to access reports from any group of vehicles through one or more IOPs.	
The Viewer software the system to operate on suitable operating system providing mapping, tracking and logging the vehicle movements. All the viewer's station shall be equipped with this software.	
Load and calibrate maps of layered type, raster or any other type.	
Display vehicle on the maps by showing its icon in the colour.	
Identity code or Alias name or any combination of them.	
Auto scroll to keep the desired vehicle in view.	
Zoom in/Out.	
Find selected by its ID or Alias name	
Message communication with the selected vehicle	
Unlimited vehicle tracking	

Advisories to indicate vehicle moving over specified area.	
Automatic detection of vehicle starting, pressing over Maximum/Minimum speed limits.	
Multimedia alarm in control office during panic condition, passing speed limits etc.	
Command to delete a vehicle from display	
Vehicle history downloading	
Display of several vehicles on a map along with their locations, speed and direction of movements and time	
Record all movements, date wise, vehicle wise etc.	
Reporting of GPS messages in encrypted form to prevent unauthorized interception of messages (Optional)	
Choice of NMEA protocols for GPS messages	
Conversions of encrypted messages to ASCII format and display	
Display of vehicle movements in spreadsheet format etc. for further Analysis	

6 Annexure

6.1 Annexure – I - BG Format (EMD)

BANK GUARANTEE IN LIEU OF EARNEST MONEY
(On Non-Judicial stamp paper of appropriate value)

TO :

The Commissioner

Nanded Waghala City Municipal Corporation

Nanded.

IN CONSIDERATION OF the Commissioner, Nanded Waghala Municipal Corporation having its registered office at Nanded (hereinafter called "NWCMC" which expression shall include its successor in business and assigns) issued a tender on Messrs. a partnership firm/sole proprietor business/a company registered under the Companies Act, 1956 having its office at (hereinafter called "Bidder" which expression shall include its executors, administrators and assigns) against Tender no..... dated (hereinafter called "Bidder" which expression shall include any amendments/ alterations to "Bidder" issued by "NWCMC") for the supply of goods to/execution of services for NWCMC and NWCMC having agreed not to insist upon immediate payment of Earnest Money for the fulfilment of the said tender in terms thereof on production of an acceptable Bank Guarantee for an amount of Rs..... (Rupees only).

1. We, Bank having office at (hereinafter referred to as "the Bank" which expression shall include its successors and assigns) at the request and on behalf of Bidder hereby agree to pay to the NWCMC without any demur on first demand an amount not exceeding Rs..... (Rupees only) against any loss or damage, costs, charges and expenses caused to or suffered by NWCMC by reason of non performance and fulfilment or for any breach on the part of Bidder of any of the terms and conditions of the said "tender".

2. We, Bank further agree that NWCMC shall be sole Judge whether the said Bidder has failed to perform or fulfill the said "tender" in terms thereof or committed breach of any of the terms and conditions of "the order" and the extent of loss, damage, cost, charges and expenses suffered or incurred or would be suffered or incurred by NWCMC on account thereof and we waive in favour of NWCMC all the rights and defences to which we as guarantors and/or Bidder may be entitled to.

3. We, Bank further agree that the amount demanded by NWCMC as such shall be final and binding on the Bank as to the Bank's liability to pay and the amount demanded and the Bank to undertake to pay NWCMC the amount so demanded on first

demand and without any demur notwithstanding any dispute raised by Bidder or any suit or other legal proceedings including arbitration pending before any court, tribunal or arbitrator relating thereto, our liability under this guarantee being absolute and unconditional.

4. We, Bank further agree with NWCMC that NWCMC shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said "tender"/or to extend time of performance by Bidder from time to time or to postpone for any time to time any of the powers exercisable by NWCMC against Bidder and to forbear to enforce any of the terms and conditions relating to Bidder and we shall not be relieved from our liability by reason of any such variation or extension being granted to Bidder or for any forbearance, act or omission on the part of NWCMC or any indulgence by NWCMC to Bidder or by any such matter or things whatsoever which under the law relating to sureties would but for this provision have the effect of relieving us.

5. NOTWITHSTANDING anything hereinbefore contained, our liability under this Guarantee is restricted to Rs. (Rupees..... only). Our liability under this guarantee shall remain in force until expiration of nine months (8 month validity + 1 month claim period) from the due date of opening of the said "tender". Unless a demand or claim under this guarantee is made on us in writing within said period, that is, on or before all rights of NWCMC under the said guarantee shall be forfeited and we shall be relieved and discharged from all liabilities thereunder.

6. We, Bank further undertake not to revoke this guarantee during its currency except with the previous consent of NWCMC in Writing.

7. We, Bank lastly agree that the Bank 's liability under this guarantee shall not be affected by any change in the constitution of Bidder.

8. "The Bank" has power to issue this guarantee in favour of NWCMC in terms of the documents and/or the Agreement/Contract or MOU entered into between Bidder and "the Bank" in this regard. IN WITNESS WHEREOF the Bank has executed this document on this day of

For Bank
(by its constituted attorney)

(Signature of a person authorised
to sign on behalf of "the Bank")

6.2 Annexure – II - MAF

MANUFACTURER'S AUTHORIZATION FORM

Date:

To
**The Commissioner,
NWCMC, Nanded**

Dear Sir,

1. Our company is a reputed manufacturer of *(name & description of equipment)*, having manufacturing facilities at *(address of manufacturing locations)* and Indian/APAC head office at *(address)*.
2. We hereby authorize M/s *(name and address of the bidder)* to submit the bid and sign the contract with your good self for the goods manufactured by us.
3. We are aware of the model numbers of our products quoted for this RFP and assure you that these are not end-of-life products. These model numbers are *(product name & model numbers)*.
4. We are willing to provide a warranty of 1 year on the above mentioned model numbers from the date of supply.
5. We assure you the availability of spare parts for the above mentioned model numbers for a period of 5 years, from the date of supply.
6. During the period of 5 years from the date of supply, in case the bidder fails to provide you the necessary service, we will be obliged to provide the same, at no extra cost.

Yours faithfully,
(Contact Person)
(Designation)
(Name of manufacturers)

Note: This letter of authority should be on the letterhead of the manufacturer with full address, phone number, email, and website address, and should be signed by a person competent and having the power of attorney to legally bind the manufacturer.

6.3 Annexure – III – Bidder Information

Format for Bidder Information Sheet& Undertaking

(In case of Consortium, to be filled in by all the partners/members)

About the Company

Name of the Company:	
Postal Address (Regd. Office):	
Postal Address (Local Office):	
Constitution, Registration No./Date:	

About the Authorised Signatory:

Name:		Designation:	
Office Address:		Email:	
Tel./Fax Nos.:		Cell No.:	

Company Financials/Headcount

	FY 2011-12	FY 2010-11	FY 2009-10
Turnover			
Turnover from Security Solutions			
Turnover from Customer Support Services			
Net Worth			
Total Headcount			
No. of Certified Service Engineers			

Company Experience

Project Name	Customer Name & Address	Project Description	Project Value	Security Component Value	Contract Period (From-To)	Project Status	Contact Person, Contact Tel. No. & Email
1							
2							
.							
N							

Company Credentials

1. QMS - Provide Details
2. Blacklisted/banned/Delisted - Provide Details

Undertaking

On behalf of M/s..... (Name of the Bidder), I, the undersigned, state that all the information stated above as well as in other parts of our bid is true. I do hereby affirm and undertake to abide by all the terms, conditions and specifications given in the Bid Document while performing the contractual obligations relating to the City Surveillance & VTS-Nanded project.

Also, I do affirm & assure that the solution proposed by us is complete & total meeting all the functional requirements of City Surveillance & VTS-Nanded as stated in the Bid Document.

Yours faithfully,

(Authorised Signatory)

Name, Signature & Seal of the Bidder

Place:

Date:

6.4 Annexure – IV – E Tendering information

Guidelines to Vendors on the operations of Electronic Tender Management System of Government of Maharashtra on <http://maharashtra.etenders.in>

1. These conditions will overrule the conditions stated in the Bidding Documents, wherever relevant and applicable.

2. Registration of Vendors:

The Vendors interested in doing business with any Department / Agency of Government of Maharashtra that have migrated their process onto the Electronic Tender Management System platform shall be required to enroll on the System.

In order to participate in the ***Restricted Tenders*** processed using the System by any Department / Agency, in addition to having a valid enrolment on the System, the Vendors are also required have a valid empanelment in appropriate category on the Sub – Portal assigned to the respective Department / Agency.

The Bidder may obtain the necessary information on the process of enrolment and empanelment either from Helpdesk Support Team or may visit the information published under the link '***How to enrol?***' on the Home Page of the System.

After submission of application for enrolment on the System, the application information shall be verified by the Authorized Representative of the Service Provider. If the information is found to be complete, the enrolment submitted by the Vendor shall be approved.

After the approval of enrolment, the Vendor shall have to apply for empanelment on the respective Department / Agency Sub – Portal (if the process of empanelment is followed in a particular Department / Agency). The application for empanelment shall be approved by the Competent Authority of the respective Department / Agency.

After the application for enrolment of the Vendor is approved, the Vendor shall be able to participate in Open and after the application for empanelment of the Vendor is approved, the Vendor shall be able to participate in restricted Tenders.

3. Obtaining a Digital Certificate:

The Bid Data that is prepared online is required to be encrypted and the hash of the Bid Data is required to be signed electronically using a Digital Certificate (Class – II or Class – III) to maintain

the security of the Bid Data and also to establish the identity of the Vendor transacting on the System. The Digital Certificates are issued by an approved Certifying Authority authorized by the Page 2 of 4 Controller of Certifying Authorities of Government of India through their Authorized Representatives upon receipt of documents required to obtain a Digital Certificate.

Bid data / information for a particular Tender may be submitted only using the Digital Certificate which is used to encrypt the data / information and sign the hash during the ***Bid Preparation and Hash Submission*** stage. In case, during the process of preparing and submitting a Bid for a particular Tender, the Vendor User loses his / her Digital Signature Certificate (i.e. due to virus attack, hardware problem, operating system problem); he / she may not be able to submit the Bid online. Hence, the Users are advised to store his / her Digital Certificate securely and if possible, keep a backup at safe place under adequate security to be used in case of need.

In case of online tendering, if the Digital Certificate issued to an Authorised User of a Firm is used for signing and submitting a Bid, it will be considered equivalent to a no objection certificate / power of attorney to that User to submit the Bid on behalf of the firm. The firm has to authorize a specific individual via an authorization certificate signed by a partner of the firm (and in case the applicant is a partner, another partner in the same firm is required to authorise) to use the digital certificate as per ***Indian Information Technology Act, 2000***.

Unless the Digital Certificate is revoked, it will be assumed to represent adequate authority of the Authority User to bid on behalf of the Firm for the Tenders processed on the Electronic Tender Management System of Government of Maharashtra as per ***Indian Information Technology Act, 2000***. The Digital Signature of this Authorized User will be binding on the Firm. It shall be the responsibility of Partners of the Firm to inform the Certifying Authority or Sub Certifying Authority, if the Authorized User changes, and apply for a fresh Digital Signature Certificate. The procedure for application of a Digital Signature Certificate will remain the same for the new Authorised User.

The same procedure holds true for the Authorized Users in a Private / Public Limited Company. In this case, the Authorisation Certificate will have to be signed by the Director of the Company.

4. Set up of Computer System for executing the operations on the Electronic Tender Management System:

To operate on the Electronic Tender Management System of Government of Maharashtra, the Computer System of the User is required be set up. The Users are required to install Utilities available on the Home Page of the System. The Utilities are available for download freely on the Home Page.

The Vendors requested to refer to the ***e-Tendering Toolkit for Bidders*** available online on the page <http://maharashtra.etenders.in/mah/index.asp> to understand the process of setting up the System or alternatively, contact the Helpdesk Support Team on information / guidance on the process of setting up the System.

5. Online viewing of Detailed Notice Inviting Tenders:

The Vendors can view the detailed Tender Notice along with the Time Schedule (Key Dates) for all the Tenders processed by the Departments / Agencies of Government of Maharashtra on their respective Sub – Portals on the System.

6. Online Download of Tender Documents:

The Tender Documents can be downloaded by the Vendors having valid enrolment on the System (and valid empanelment in case of Restricted Tenders) from the respective Sub - Portal of the Department / Agency on the System.

7. Submission of Bid Hash (Seal) of online Bids:

Submission of Bids will be preceded by submission of the digitally signed Bid Hashes (Seals) as stated in the Tender Time Schedule (Key Dates) published in the Notice Inviting Tender. The Hashes are the thumbprint of electronic data and are based on one – way algorithm. The Hashes establish the unique identity of Bid Data. The Hashes are digitally signed.

8. Generation of Super Hash:

After the expiry of the cut – off time of submission of digitally signed Bid Hashes (Seals) by the Bidder has lapsed, the stage is automatically locked and digitally signed Super Hashes (Seal) will be generated by the Competent Authority of the respective Department / Agency will generate a Super Hash.

9. Decryption and re-encryption of online Bids (submitting the Bids online):

After the generation of Super Hash, the Vendors have to decrypt their Bids using their Digital Certificate and immediately re-encrypt their Bids using the Public Key of the Competent Authority of the Department / Agency. At this time, the Vendors are also required to upload the files for which they generated the Hash values during the Bid Preparation and Hash Submission stage.

The Bid data / information of only those Vendors who have submitted their Bid Hashes (Seals) within the stipulated time (as per the Tender Time Schedule), will be available for decryption and re-encryption and to upload the relevant files. A Vendor who has not submitted his Bid Hashes (Seals) within the stipulated time will not be allowed to decrypt / re-encrypt the Bid data / information.

For submitting the Bids online, the Vendors are required to make a payment using the **Electronic Payments Gateway Service of Rs. 5,000/- (Rupees Five Thousand only) towards the fees of the Service Provider.** The various options of making online payments are available on the Home Page of the System.

10. Submission of Earnest Money Deposit:

The Vendors are required to submit the Earnest Money Deposit and cost of Tender Documents in a Sealed Physical Envelope and the same should reach the concerned Competent Authority

before the last date and time as specified in the Tender Documents. Vendors are required to keep the instruments for submission of Earnest Money Deposit and the cost of Tender Documents ready as the details of these instruments are required to be entered in the System during the Bid Preparation and Hash Submission stage. The details of the Earnest Money Deposit and cost of Tender Documents instruments shall be verified and matched during the Tender Opening event.

11. Opening of Electronic Bids:

The Competent Authority receiving the Bids shall first open the manual Earnest Money Deposit and cost of Tender Documents and verify with the details submitted online. The Competent Authority shall then open the online envelope(s) (decrypt the Bid Data) through the System. The Authority shall generate the Hash value of each envelope of each Vendor and match it with the original Hash value of the envelope generated and submitted by the Bidder during the Bid Preparation and Hash Submission stage.

12. Tender Schedule (Key Dates):

The Vendors are strictly advised to follow the Dates and Times allocated to each stage as indicated in the Time Schedule in the Notice Inviting Tender for each Tender. All the online activities are time tracked and the Electronic Tender Management System enforces time-locks that ensure that no activity or transaction can take place outside the Start and End Dates and Time of the stage as defined in the Tender Schedule.

6.5 Annexure – V - BOQ

Bill of Quantities

S. No	Description	Unit	Quantity
A	CAMERA		
1	Fixed IR Megapixel IP Cameras with dome ,industrial grade power supply as per technical specs and Weather proof junction box	Nos	75
2	HD Megapixel PTZ , with dome, industrial grade power supply as per technical specs and Weather proof junction box	Nos	25
3	Portable Fix Camera (battery operated and local storage)	Nos	4
4	PTZ keyboard/joystick	No	1
B	COMMAND & CONTROL ROOM		
5	Server with Video management ,viewing & recording software and AVL software as per technical specification .	No	1
6	Server for Video Analytics software	No	1
7	Storage server - NAS/SAN - recording /Storage for 30 days to be configured with RAID 5 and should be able to store recording with full camera resolution and frames as per the camera technical specification (Recording 24 x 7)	No	1
8	Video wall monitors (3X3) 42"	set	1
9	Network Switch - 24 port giga as a Core switch Layer 3	No	1
10	Network Switch - 48 port giga switch Layer 2	Nos	4
11	Fibre Accessories	set	1
12	Server Rack	No	1
13	online UPS of suitable rating with 1 hr backup	No	1
C	OTHER		
14	42" Monitor for control room	Nos	2
15	Workstation System for control room for viewing and monitoring as per specification	No	2
16	Network Switch L2 24 port/Network rack and accessories	Set	6
17	online UPS of suitable rating with 1 hr backup	No	6

S. No	Description	Unit	Quantity
D	VTs		
24	VTs (GPS/GPRS)	Nos	25
25	AVL Software	Nos	1
26	Monthly recurring charges (for 5 yrs - 1 year warranty and 4 yrs of AMC)	year	5
F	Connectivity		
27	OFC Lease line, dark ofc lease line and copper lease line or GPRS charges per year for the entire solution offering as mentioned in TS (After Go Live, SI has to give support during one defect liability period also)	year	5

{end of document}